COAL AGE

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Byproduct Coking

THE production of byproduct coke in 1915 was 14,072,895 short tons. During the first half of this year, at least 400 byproduct ovens were completed, with an annual capacity of more than 1,500,000 tons. There are now in course of erection 965 ovens for the United States Steel Corporation, while 1,065 are under construction by independent iron and steel interests and one merchant interest.

It is difficult to realize the rapidity with which this country is turning to byproduct coking. Present activity is in striking contrast to the slowness of adoption in the early years. Although the first byproduct coke on a commercial scale was made in 1896 in the United States, it was not until 1900 that a single million tons of such coke was produced.

The 2,030 byproduct ovens now being built will have an annual capacity of approximately 8,000,000 tons, so that when the construction program now under way is completed, the United States will be producing 24,000,000 tons of byproduct coke per year.

The maximum production of coke was 46,299,530 short tons in 1913. The production of pig iron in that year was 30,966,152 gross tons and the reported consumption of coke by the blast furnaces was 37,192,287 short tons. Running at full capacity the iron industry in the near future will produce 40,000,000 tons of pig iron a year, which indicates that the country's annual coke requirements may be placed at 60,000,000 short tons, of which 24,000,000 tons of byproduct coke would be 40 per cent. In lean years byproduct ovens will as a rule run full, variations in demand being taken care of by beehive ovens.

Byproduct coke even now is a serious influence in regulating the price of Connellsville coke. Of the new byproduct capacity that will be completed this year, not less than 7,000,000 tons is destined for consumers hitherto large users of the Connellsville product. Since the production of the Connellsville and Lower Connellsville regions is about 20,000,000 tons a year, it is evident that within 12 or 18 months about one-third of the market will be taken away from Connellsville. The term "market" is here used in its broad sense, not in the sense of the coke involved having hitherto been sold. The Steel Corporation and several of the independents have been making Connellsville coke of their own. In a number of instances builders of byproduct ovens represent interests that have hitherto purchased Connellsville coke in the open market.

Authorities estimate the life of the Connellsville coking-coal seams at 25 years, based on an output of 20,000,000 tons a year. It is now certain that a large part of this coal will eventually be shipped to byproduct ovens. Connellsville operators recognize this situation, at least in a theoretical way. They are urging the Interstate Commerce Commission to do away with the differentials against Connellsville coal and establish the same rates that apply on Pittsburgh and Westmoreland coal.

The producers are not as ready now as they may be later to sell their coal at prices competitive with other districts. Byproduct coke manufacturers are aware that they can use mixtures of coal from other fields, the result being that very few of these companies are willing to pay a large premium for Connellsville coal, though on anything like even terms it would be preferred to the extent of from 50 to 80 per cent. of the entire mixture.

Ideas and Suggestions

A Few Thoughts on Safety

The application of labor-saving machines in production has gone a long way toward reducing the risks in mining. However, their application requires a new spirit previously unknown—a spirit of alertness and never-ending caution.

If coal was extracted in the same careless and haphazard manner today as obtained 20 or 25 years ago, every coal company in America would require a private hospital to be included in its equipment.

A statement of this kind may be considered sensational and far-fetched, but think a little, and compare the output of a quarter of a century ago, against the 3,000-ton mines of today, taken together with the great number of men employed, and the dangerous crossings, the enormous amount of exposed live wire, the great activities in the bottom and on the haulways, the locomotives in some cases hauling to the face of the rooms, the number of men employed in and around our mines, etc., etc. If great care was not observed, don't you think the foregoing statement would be a materialized fact?

What are we doing? Or rather, what have we done to accomplish the present fairly satisfactory and effective method of excavating and transporting coal? The greatest factor in securing, let us say, this phenomenon has been common sense and human feeling combined with a knowledge of the economic effect of time lost through accident.

Every year coal-mining and other industrial concerns lay aside large sums of money as appropriations for safety. Nearly every coal company of any standing employs safety and efficiency engineers. Many do not halt at this—they also have mining experts to instruct the officials in rescue and helmet work. They are also taught the principles of economics and safety in production.

There are many other factors to be considered in arriving at the conclusion as to the cause of the popularity of the safety movement, such as a growing tendency among miners to "play safe." This may be the effect of education and a higher knowledge of their family responsibilities.

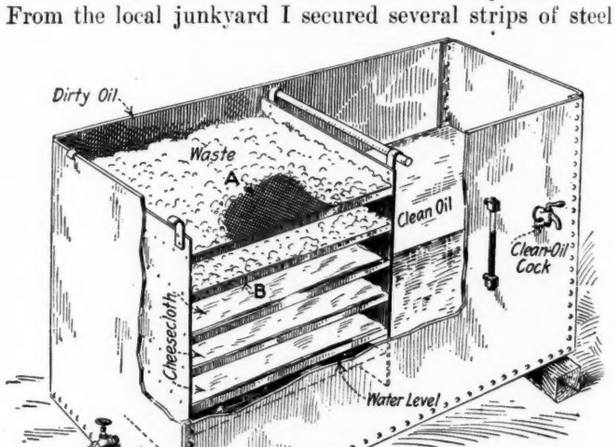
The average mining man of today is a close student of the law of "cause and effect." He resembles a surgeon in this respect—he gets to the root of the trouble and works from that point. He tries to make impossible a repetition of accidents where the cause is known. He examines, he analyzes, he arrives at conclusions through a process of systematic reasoning. This, then, is perhaps another great factor in the success of the safety movement.

But while there is no gainsaying the fact that the safety movement has increased in popularity, there are still many whose interest is of a lukewarm character and they appear indifferent and apathetic to its far-reaching benefits. It is our duty, then, if for no other reason than self-preservation, to boost the movement along.

Here is a suggestion which, if acted upon, might bear good results. Have an examination, say every six months, to test the employee's knowledge of safety appliances and methods. As an incentive offer a substantial prize or premium to those making a certain percentage. Make the result of the examination as public as possible. This will doubtless establish a healthy spirit from which great good may be realized.

Homemade Oil Filter*

The accompanying sketch shows an oil filter that I made for our plant, as we were badly in need of a filter and unfortunately the company did not feel disposed to buy one. In the storeroom was found an old 54x40x18-in. steel tank that had been used as a boiler-compound tank. From the local junkyard I secured several strips of steel



DETAILS OF FILTER CONSTRUCTION

about ¾ in. wide by $\frac{3}{16}$ in. thick, also two pieces of 18-gage iron 17⅞ in. wide by about 22 in. long. The narrow strips were bent to form rectangles 17½x27 in. Five of these were covered with heavy screen as at *A* and spaced equally in one end of the filter, as shown at *B*. They were riveted to sheet-iron pieces to which hooks were riveted at the top. A rod was run through the tank to hold one side of the basket, the other side being hooked to the end of the tank. A gage-glass and clean-oil cock were fitted in the positions shown. An old 1-in. pipe connection and valve in the bottom at one end of the tank served as a sludge and drain valve.

The action of the filter is as follows: The two upper shelves of the basket are filled with waste to a depth of about 3 in. The three lower shelves are covered with five or six layers of cheesecloth. The tank is then filled with water up to the point indicated, and the filter is ready for use as soon as the basket is placed in position.

The oil to be filtered is poured into the top of the basket and passes down through the waste and cheesecloth, through the water and rises in the clean-oil chamber. From here it is drawn off through the clean-oil cock.

*Written by Charles Ryan, Hume, N. Y., and published in "Power."

This device thoroughly filters the oil, and the actual cost was about $2.

The basket may be removed at any time to renew the cheesecloth and waste; the water should be drawn off frequently and replaced by clean. A steam coil could easily be placed in the filter to keep the oil and water warm if it was necessary to put it in a cold place.

Mixed Labor in Coal Mining

By C. J. Fuetter*

A few days ago, while riding on a train I happened to overhear the conversation of two men. Judging from their talk, they were both probably following mining. One man was telling the other how he had just quit his job.

Having started to work for a certain company a few days previously, he was given a job at braking on a main haulage motor, with the promise of being promoted to motorman at the first vacancy. He accepted the job and to his surprise, when he reported for work the next morning, found that the seat on the motor he was supposed to brake for was occupied by a colored man. As he had a family at home depending on him, he stayed with his new job just long enough to locate another.

From what he told his friend, he didn't seem to think much of the company that had employed him. He certainly was a bad walking advertisement for the last firm he worked for. Of course one might say he had the privilege of refusing the job. This, however, is not much of an argument.

Some of the foremost companies in the land long ago found that it was a good policy, also a paying one, to so far as possible keep white and colored labor apart. This is accomplished by having a certain part of the camp reserved for colored people and also, as far as convenient, certain working places in the mine.

It is to be regretted that some companies are slow in falling in line in this matter. Wherever one finds a colored motorman having a white brakeman or a machineman a white helper, he may be sure there is more or less friction between the two. This means little coöperation or none at all, and where these conditions exist anything the company may do in the way of safety and welfare work is only so much lost energy. Some officials will tell you they prefer to have colored labor to handle their machinery, and in some cases this is true. I have found that in certain fields the only kind of good, conscientious and trustworthy men to handle machinery can hardly be secured except among the colored class. But when this is the case, one should be careful in not mixing the white and the black.

If a mine foreman thinks he has a first-class motorman in a negro, why not put a colored man to brake on that motor? This does not mean there should be any race prejudice, as any man is entitled to a fair chance and fair treatment whether black or white. But there is no use in hiding the fact that a white man doesn't care to have a colored man for his buddy.

The days of the double house of which one-half was occupied by a white family and the other half by a colored one are past and gone; so why not apply the same principle in and around the mines?

*Logan, W. Va.

Worth Reading

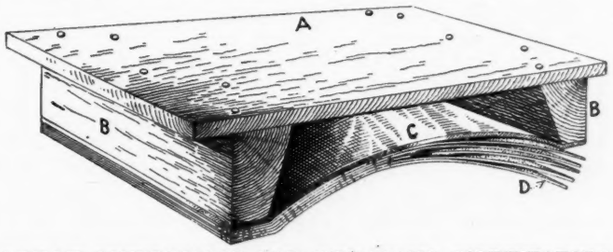
The article by H. M. Warren on the next page is the second installment of a series of articles on underground mining by some of the most competent and experienced engineers in the world. Next week we will print an article on Safety and Efficiency in Coal Mining by Edward H. Coxe, assistant to the president of the United Coal Corporation, Pittsburgh, Penn. Never before have such important contributions to mining literature been offered to those engaged in producing coal. The articles will cover a period of several months. See that you don't miss a single one of them.

A Commutator Truer

By J. E. Smith*

The article by C. J. Fuetter appearing on page 446 of *Coal Age* for Mar. 11 brings to mind a contrivance which is easily made and which I have often used for smoothing up commutators.

In the accompanying illustration of this device, *A* is a piece of 1-in. board long enough to go inside of



SIMPLE CONTRIVANCE FOR SMOOTHING COMMUTATORS

the motor or generator frame and about as wide or a trifle narrower than the commutator; *BB* are two pieces of wood, each beveled on one side and nailed to *A* with their beveled sides facing each other; *C* is a piece of heavy flexible leather, fastened to both of the blocks *B* and long enough to fit the curvature of the commutator when placed on it; *D* is sandpaper tacked to only one of the blocks *B*, the other end being loose.

In order to use this device, it will probably be necessary to remove one of the brush-holders, the top one being usually the most convenient. Place the apparatus on top of the commutator, grasp the ends with both hands and exert a steady pressure downward. As the armature revolves, the sandpaper will cut down the commutator, making it smooth and regular. It is well to begin with 12 or 15 pieces of sandpaper tacked to the truer. The first one should be coarse, followed by the finer grades and finishing with the finest. As each piece is worn out, it may be torn off and a new one is ready in place. This device works faster and does a better job than might be imagined. It might well be used as a finisher after employing the sandstone, which is often used for this purpose. The sandpaper would in this case true up and smooth out any irregularities that the stone might leave.

*Glenwood Springs, Colo.

Electrical Distribution and Application in Mines--II

By H. M. Warren*

SYNOPSIS—In this, the second article of the series on this subject, pumping, hoisting, locomotive haulage, cutting, air compression, electric drilling, lighting and heating are discussed. Electric heating is employed only in rare instances.

Electric pumps of the plunger type have long been used, but it was not until about 9 years ago that centrifugal pumps were considered for mine service. Previous to that time centrifugal pumps, particularly for high-lift work, were not available in this country. They were, however, being developed and constructed abroad. They were then manufactured in this country, and I recommended and installed a 15-in. 6-stage, bronze centrifugal pump of 5,000-gal. capacity, working against a head of 500 ft., in 1907. It is driven by a 1,000-hp. 2,300-volt three-phase motor and is still in daily service. Although handling mine water having about 30 grains of free acid to the gallon, the casing is still in good condition, but the impellers have been changed a number of times and be primed before starting, to protect their internal rubbing surfaces.

In large units it is advisable to use a wound-rotor induction motor, rather than one of the squirrel-cage type, the former having the characteristic that the current is practically proportional to the torque, while the latter type requires a high rotor current during the starting period and excessive current at the time of throwing the starting compensator from the starting to the running position; for as the pump is primed before starting, it will discharge water before the motor is up to its running speed, and as a result it is heavily loaded at the time of throwing the compensator to the running or full-voltage position. This feature gave considerable trouble in the large unit referred to, the rotor of which was afterward changed to one of the wound-rotor type.

Motors of the squirrel-cage type are, however, generally satisfactory for operating centrifugal pumps requiring up to say 200 hp., even though they are primed before starting. These are of course subject to the conditions

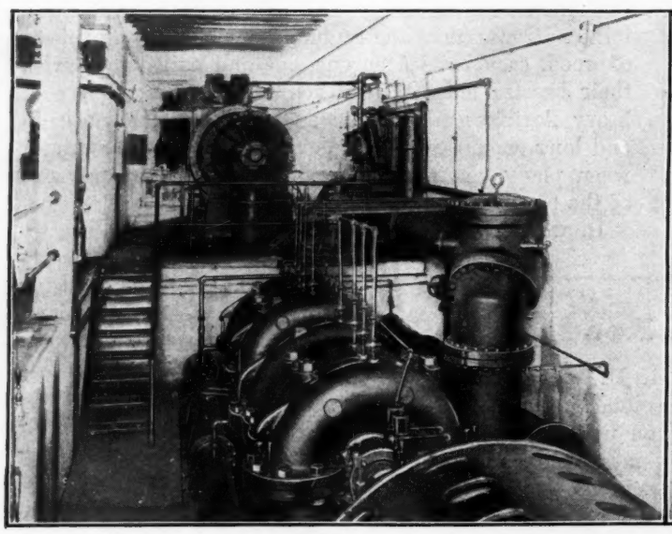


FIG. 10. AN UNDERGROUND PUMPROOM

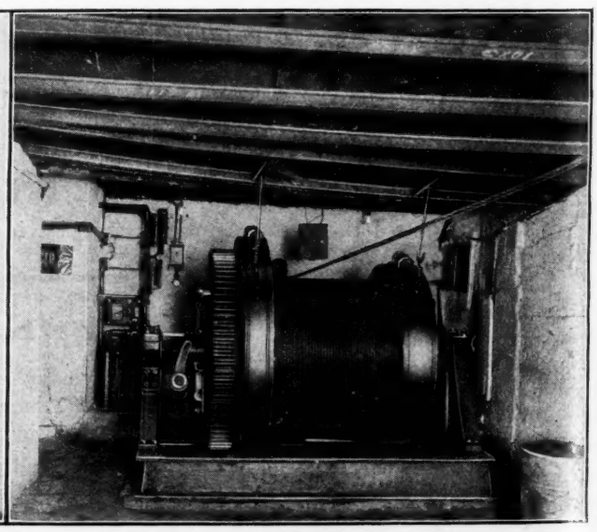


FIG. 11. AN UNDERGROUND HOIST

the diffusion rings once. Fig. 10 shows two 5,000-gal. pumps installed at present. Small motor-driven vacuum pumps are used for priming the large machines.

Centrifugal pumps have many advantages, such as small space requirement and freedom from water hammer in the discharge lines. They also permit the use of high-speed motors, and the pumping unit is low in first cost when compared to a motor-driven reciprocating pump, particularly in the larger sizes. Single-stage centrifugal pumps may be started before the machine is primed. If this is done, the starting condition is easy and requires no special consideration in the motor design. Multiple-stage pumps for high-lift work must stated, and the rotor should therefore be constructed to withstand the severe starting conditions.

If the capacity of the power plant is small, it might then be advisable to employ mostly motors of the wound-rotor type, even in sizes below 200 hp., or if the power is purchased, the power company might object to the use of squirrel-cage motors even in small sizes, because of the effect which starting might have on the voltage regulation of the circuit.

The small-capacity centrifugal pump has a low efficiency, and therefore plunger pumps are more desirable for capacities up to about 300 or 400 gal. per min., particularly when the lift is high, as the amount of power saved by the use of the plunger pump is then an important item.

*Electrical Engineer, D., L. & W. R.R. Co., Scranton, Penn.

One of the handiest and most useful pumping outfits is what is known as the "portable track pump," driven by a direct-current motor. It can be run from place to place and operated from the trolley circuit. Such a pump having a capacity of about 100 gal. per min. and operated by a 10-hp. motor is good for lifts up to about 300 ft. The motor should have an accumulative winding (on account of variable trolley voltage) and, if desired, can be designed to start directly at the trolley-line voltage. Thus no starting resistance is necessary—the switch is simply closed and the motor starts.

This feature is particularly valuable, because if the power fails and is again put on, the motor starts without requiring any attention. If the special motor of this type is not used, then the starting device on the motor should be provided with a no-voltage release to open the circuit, so that the motor cannot again be started without the proper manipulation of the starting device. When induction motors of any type are used (except in very small sizes), a no-voltage trip should be provided, and in the larger units particularly, provision should be made to prevent the burning out of the motor due to single-phase operation. This can be done by the use of proper trip coils and current transformers in connection with the oil switch controlling the motor circuit.

To explain single-phase operation, assume a three-phase circuit supplying a three-phase motor in operation. If any one of the wires becomes broken, or if one fuse should blow, the motor would continue to operate, being supplied with power from one phase only. Under this condition, if the motor is fully loaded, the current would exceed the safe carrying capacity. It is just as desirable to protect the smaller motors from possible single-phase operation as the larger ones, but not until recently has any starting device been developed for use with small motors with the view of taking care of this feature. Ordinary fuses cannot be relied on to protect a squirrel-cage induction motor in this case, because the fuses in the motor circuit must be of sufficient capacity to permit starting the machine under operating conditions. And when they are of sufficient capacity to do this, they are usually too large to afford protection against single-phase operation.

Hoists in Anthracite Mining

Hoists of various sizes are employed in anthracite mining, but there is a more or less general practice in the selection of size. Alternating-current motor-driven hoists of about 200-hp. capacity (continuous rating) are well adapted for certain slope work. These are designed for a rope speed of about 550 ft. per min. and a rope stress of 10,000 lb. Such machines have two gear reductions and are provided with two hand-operated brakes. The drum is loose, and the drum clutch is thrown in and out by compressed air supplied by a small motor-driven compressor (see Fig. 11). Where direct-current is available, smaller hoists are operated by series-wound motors of the railway type, and for the larger equipments two motors using series-parallel controller make an efficient and reliable outfit. The use of two motors and the control referred to cuts down the rheostat losses when operating at low speeds.

For work on planes a two-speed hoist is desirable, using the low speed when pulling the loaded cars out

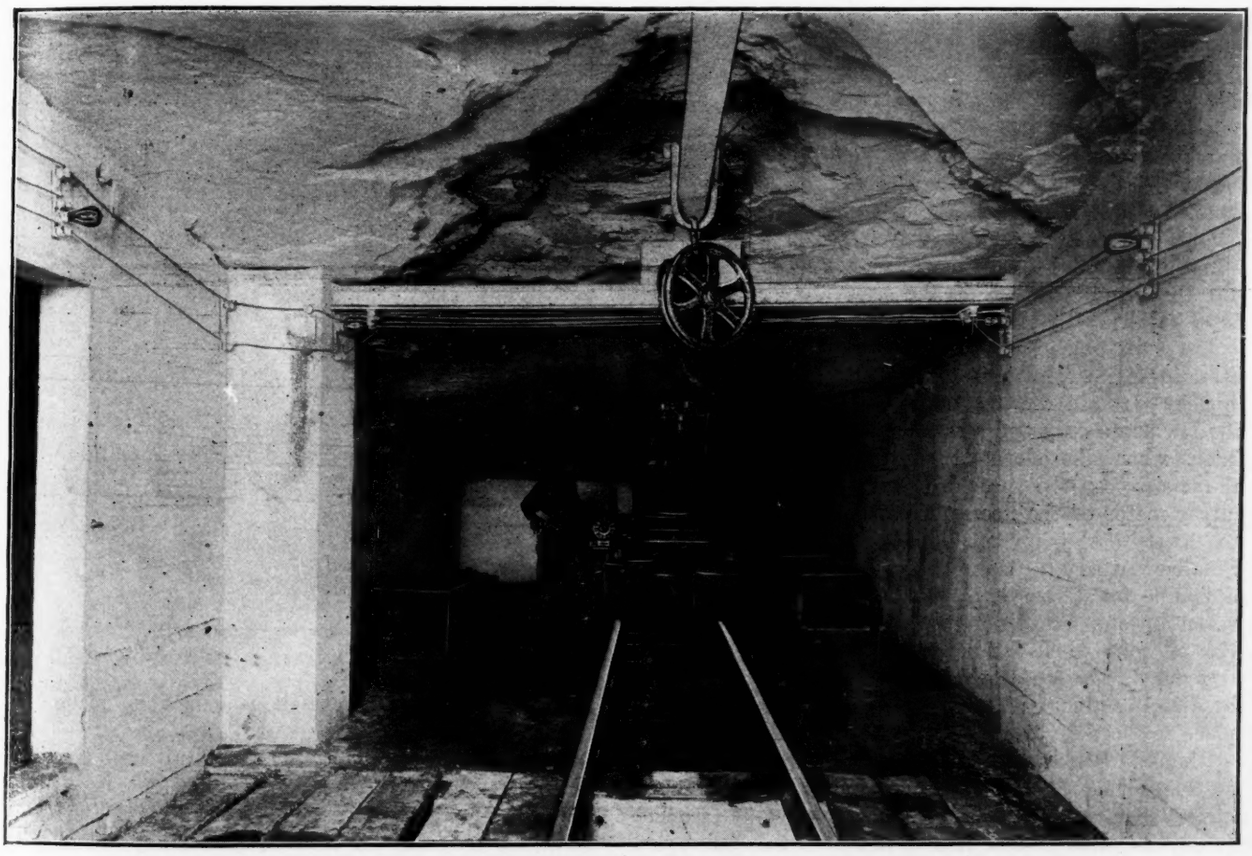


FIG. 12. AN ELECTRIC LOCOMOTIVE OVER REPAIR PIT

of the lifts and the high speed when handling the empty cars up the plane. By using the two-speed arrangement the size of the motor is kept down, with resultant less cost of equipment, while the power demand is reduced to a minimum. A hoist for this service must be designed for the rope stress when handling loaded cars out of lifts, and the brakes must be of sufficient capacity to properly handle the loaded trip when lowering down the plane, without overheating.

The two speeds are provided by means of two sets of gears and opinions, the gears being mounted rigidly on the same shaft while the pinions are mounted on a quill on an extension of the motor shaft or upon another intermediate shaft, as the case may require, the gears and pinions being of such ratio as to give the required speeds. To change the speed the pinions are moved by means of a lever, so that either one or the other engages with its proper gear. Hoists of this type are designed for speeds of about 150 and 500 ft. per min.

Care should be taken when using this type of hoist, to see that the trip is lowered by the brake with the clutch out, for if the loaded trip were lowered with the clutch in and the motor connected through the gearing for low speed, it would be driven at a high rate, with a possibility of bursting the binding wires of the armature, resulting in serious damage.

In certain cases these equipments can be used to good advantage for development work in driving slopes, using the low speed only and a small motor; later, when the slope is completed, the hoist can be provided with a larger motor of the necessary capacity to hoist the trips at high speed. Smaller outfits are, however, generally advisable for development work, being taken out and replaced with the proper size of hoist when the development is completed. These are ordinarily driven by direct-current series motors and moved from place to place to meet conditions.

Magnetic brakes may be applied to the motor shaft and so connected that they will be applied whenever the circuit is open. This arrangement, however, is frequently objectionable in that it does not permit as free operation of the equipment as might be desired. To prevent a runaway in the event of the power failing, this type of brake can be used and connected to the circuit before it enters the controller. Equipments have been damaged through the operator starting a trip up the slope, the power failing and the loaded trip running back at high speed, because of the operator being away from the equipment at that particular time. The arrangement just outlined will prevent damage from this cause.

Electric Mining Locomotives

The reader is undoubtedly familiar with the electric mining locomotive of the straight-haulage and cable-reel types, so that no attempt will be made here to describe them. As there are now a great number of locomotives in service, the question of standardization of parts where possible is important. In so far as I am aware no attempt has yet been made by the manufacturers to do this, and it is undoubtedly a difficult matter. This feature is now being taken up by a committee of one of the mining organizations, and it is to be hoped that at least some progress can be made. There is no question but that a mining company can save considerable expense and delay by standardizing certain parts of all locomotives which it purchases. The company with which I am connected has standardized its locomotive gears, pinions, wheels and axles and the assembly of these, so that for its 7- and 8-ton equipments the one wheel and gear assembly is the same for all locomotives. A similar standard is adopted for the 10- and 13-ton machines. This applies to practically all the 270 locomotives in service, except a few at one colliery, where the track gage is 30 in. and the voltage 500, while at the other collieries the track gage is 35½ in. and the voltage 250.

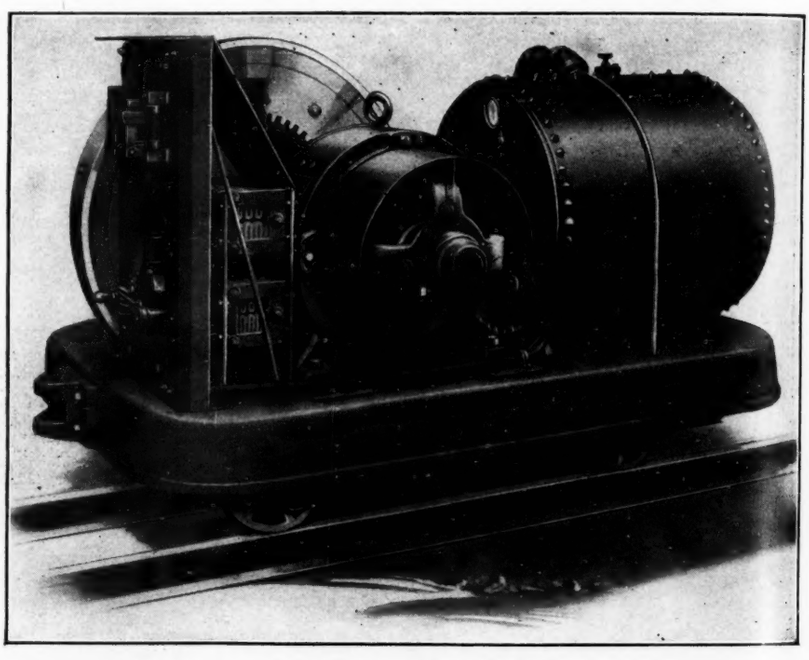


FIG. 13. A PORTABLE SULLIVAN AIR COMPRESSOR

Ball bearings for the motor armatures have been tried out for a number of years with great success. Motors with interpoles give excellent commutation and should result in long life of brushes and commutators. The iron losses are low, the continuous capacity high, and the motors are therefore well adapted for the service, but excellent motors without interpoles have been and are still being manufactured.

Storage-battery locomotives have been used to a certain extent and for special cases are undoubtedly very satisfactory. For our mining conditions in general, however, no satisfactory storage-battery equipment has yet been offered that will handle the heavier mine cars on the grades to be contended with in a general practice, so that for the time being, at least, the well-known cable-reel gathering locomotive will be used for this purpose, although the storage-battery locomotive, if it could be designed to meet the conditions, would be very desirable.

The wiring for the motors and controller should be of such size as to prevent deterioration of the insulation

due to excessive heat. In practice it has been found that varnished cambric insulation gives much better service than rubber, the latter being subject to quite rapid deterioration from oil and general conditions.

To facilitate the proper maintenance of electric locomotives it is advisable to provide a well-lighted room, with an overhead beam and chain hoist, to facilitate the handling of heavy parts. A pit under the track should also be provided to facilitate inspection and repairs, and a portion of the pit, at least, should be widened out and have removable rails so that the locomotive can be blocked up on the ends and the old wheels dropped into the pit. Fig. 12 shows a general arrangement of this sort which is very satisfactory.

Coal-Cutting Machines

It is only during recent years that coal-cutting machines have been used in the anthracite field. They were not tried out to any extent until about five years ago, at which time the machines gave a great deal of trouble and were not well adapted for the service. Numerous changes and improvements have been made, and the later types give good service. Care should be taken when purchasing a machine for cutting a long face, to be sure that the motor has a sufficiently high continuous capacity to meet the condition. When cutting the face of chambers or rooms, the service is intermittent and the motor has an opportunity to cool. For this reason a motor that would be satisfactory for this purpose might easily overheat when worked continuously on a long face. These machines are operated from the direct-current trolley circuit, although alternating-current equipments are available and can be used where it is advantageous to do so.

Portable Air Compressors

The development of efficient and practicable air drills of the hammer type, together with the necessity of mining thin seams of anthracite requiring much rock work in their development, has given a great impetus to the use of this type of drill, and to provide the necessary compressed air portable air compressors have been introduced. These are driven by direct-current motors connected to the trolley circuit. The compressors, having a capacity of about 200 cu.ft. of air per min. at about 100 lb. pressure, are water-cooled by means of a hopper jacket. These machines are of sufficient size to operate two or three of these small air drills. This combination has given great satisfaction. Sometimes they are used absolutely as portable equipments, and in other cases they are installed at one side of the road and kept in that location for six months or more, small pipes being run from the compressor to the working places for taking up the bottom rock (see Fig. 13).

Electric Rock Drills

A number of types of electric rock drills have been manufactured and tried out during the past decade, but they have all been unsuccessful for various reasons. There is, however, at the present time, an electric rock drill on the market that apparently has much merit and can undoubtedly be used to good advantage for certain classes of work.

Electrically driven coal drills have been used for some time with more or less success. The equipment itself works well, but for use in thin veins where it is difficult to handle heavy equipment, it is a question as to whether electric drills offer as much advantage as the light-weight, easily portable air drill.

The electric drills have the advantage of being much more efficient in the use of power than any compressed-air scheme, but they have the disadvantage, particularly the rock drill, of much greater weight, the rock drill requiring some method of support for its operation. A decision as to which is best will therefore depend on the relative cost of power for operating the drills and the cost of labor involved in handling them.

Electric Mine Lighting

It is customary to furnish power for lighting around the foot of the shafts, in the barns, hospitals, offices, hoist and pumprooms and other locations where there is electrically driven apparatus; also along the haulageways, at turnouts and other important points. This lighting is ordinarily done by means of incandescent lamps receiving power from the trolley circuit, but tungsten lamps are being tried out and will undoubtedly prove successful for this service. Because of the voltage two or more lamps are usually operated in series. Owing to the fluctuation of the voltage, tungsten lamps will have the advantage of giving considerably more light during times of low voltage than the carbon lamps, with the additional saving in power due to the higher efficiency of the lamp itself.

Where alternating-current power is available, much better lighting service can be obtained by using this power, rather than the direct-current trolley circuit. The voltage, and therefore the light, would remain practically constant; 110 or other standard voltage could be employed, permitting the use of single lamps. Furthermore, the life of the lamps will be increased on account of the better voltage regulation. In general a lighting system at a low voltage is desirable.

Heating Below Ground

Because of the expense of heating by electricity, it is used for this purpose only in extremely special cases, such as the heating of hospitals at points where steam is not available for this service. When this is done, it is advisable to provide, in connection with the electric heater, an automatic thermostat control for cutting the heater in and out to maintain the proper predetermined temperature and use the minimum amount of power.

Miner Run Over by Motor—In reversing judgment against a coal operator for injury to a miner who was run over by a mine motor, the Kentucky Court of Appeals holds that although a miner does not assume the risk of being injured through violent, unusual and unnecessary contact of a motor with a car propelled thereby, the operator is not liable for injury caused by negligence of a fellow servant, nor for negligence of a superior servant, not resulting in death and not amounting to gross carelessness. (Barnett vs. Nebo Coal Co., 180 Southwestern Reporter, 79.)

Operator's Duty to Sub-Employees—A mine owner who employed a firm to mine the underlying coal at an agreed price per ton, the firm employing and paying its own employees, was under no obligation to such sub-employees to prop up rock as rendered necessary as the work of mining progressed. (Alabama Court of Appeals, Edwards vs. Sloss-Sheffield Steel and Iron Co., 70 Southern Reporter, 285.)

Similar data is being compiled to determine the amounts paid for medical attention and compensation in non-fatal accidents.

Imagination Applied to Mining

By J. F. K. Brown*

SYNOPSIS—A few glances into what may be accomplished in the future through the application of principles and inventions either already established or on the verge of discovery.

Almost everyone has heard of "electricity applied to mining," the "mechanics of structures applied to mining" and the "applicability of steam power to coal mining." In fact, we know that mining has had applied to it, or tied on somehow, pretty nearly all the applicable sciences that can be conjured up or manufactured, until perhaps few believe that a coal miner may have any ideas of his own. But up to the present date we have not yet clapped eyes on the Jules Verne of the mining industry to add a touch of lightness to the more somber editions of technical matter of the day. We have not heard of "imagination applied to mining."

Prophecy was apparently, from the Old World records, a flourishing industry in the days when mining was the product of muscles minus brains, and it still occupies a prominent place in the prospectuses and annual reports of many modern concerns. Prophesied inventions nearly always come to pass, and the prophet can easily win a name, provided he places no time limit on his inventions.

A Promising Field

In running our eyes over a promising field in which to "imagine," we read one day about wireless telegraphy and the next that a semiwireless system had been tried out in some of the foreign coal mines. Well, while half a loaf is better than no bread, prophecy can hardly be expected to stand still with two such promising clues. It needs only half an "imagine" to come to the conclusion that there must be many geniuses turning their attention to the subject of the propagation of wireless impulses through solid bodies and that the day of this accomplishment cannot be long delayed.

Science has told us many things in the past, that it proves wrong in the future, but it has committed itself for the time being to two statements: First, that the propagation of electrical impulses through the atmosphere is due to the presence of a substance unknown but imagined, and named ether, which is presumed to occupy the space between the particles of air; secondly, that solid bodies are also porous and permeated with the same immaterial substance. Propagation through solids is therefore a reasonable and logical step from transmission through the atmosphere. When in the future this feat is accomplished there will be before the mine manager a means of communication in the telegraphic code with the mine boss—in only fixed parts of the mine, however.

But for mining operations this is an unhappy solution. The invention does not go far enough, since a mine manager is not naturally adapted to being a good telegrapher and the limits of the Morse code do not permit of sufficient scope in lurid conversation, without which we are informed management cannot proceed.

However, there is in the background, somewhat late but nevertheless there, another gentleman gifted with imagination, who intends to produce the wireless telephone. At first, no doubt, it will be a cumbersome instrument, a cousin to the once huge wall telephones that were ancestors to our present neat and handy type, but science always improves on its own work, and we may yet expect to see easily in the next 10 to 15 years, the portable pocket wireless telephone, and this, combined with transmission through the earth, will put into the hands of the mine manager a potent factor for mine control and safety.

The Wireless Transmission of Power

But even in these two "imaginations" there are only small beginnings and hints of greater. The day before yesterday we transmitted words by wire; yesterday we sent power long distances by wire; today we send words without wires; tomorrow we will be sending power without wires. It cannot be done? Mr. Reader, there will be nothing in the future that science cannot do; it is only time that makes anything seem impossible. Wireless power transmission has already been accomplished in the experimental stage, and when after a season of future trial it becomes a commercial possibility, it will, coupled with transmission through the solid crust of the earth, enable us to see the dawn of another day when the use of power in mining will be revolutionized. No longer will there be trouble with wires and cables and all their consequent drawbacks. Instead, motors will be driven directly from above from a station erected on the surface and sending its power rays downward perpendicularly.

Haulage motors receiving current from wires will be things of the past—curiosities—although to us they are only in their infancy, and in their place will be either storage motors fed at certain fixed stations by wireless current or entirely independent self-starting and operating units will be running on the underground roads.

The next step in the genealogical tree of future invention after wireless power transmission—perhaps contemporaneous with it—will be control by wireless. Control by wireless means, in mining, the ability to start and stop any power-driven unit or—more important still—to control the speed and direction of motion of any traveling piece of plant in the mine from a central point. The wireless control of a boat upon the surface of the water, if not already established, is on the verge of accomplishment, and evidently we are only at the beginning of our knowledge of the possibilities in this direction.

This means ability to control on a large scale the movement of underground trains and cars over any of the underground roads at will. It places the haulage problem of the mine in the hands of a dispatcher on the surface, sitting before a keyboard and watching an illuminated plan of the mine. His position would become highly responsible and important because "jams" and "head-on" collisions would in those future days, when speed of operation will have tripled, be even more disastrous than at present.

Telephotography May Be Employed

There is still another invention, easily imagined but very backward at appearing in public. We refer to the lately discovered telephotography, an art that has already been tried by some of the daily papers, but so far without

*Sydney, N. S., Canada.

any very satisfactory results. Still, the invention of phototelegraphy is an established fact that is on the road to important improvements in the future. Please substitute for telephotography the words wireless photography and think of the ease of the future manager facing his daily changing mine plan, built to occupy the side of his office rooms. Possibly it will be a huge plate hidden in artificially produced darkness, showing the limits and the direction of the underground roads.

Someone may object that we cannot telephoto the underground roads without light, nor can we get that in the mine. This is true, but we could photograph and transmit to the surface the moving points of light that indicate the presence of a man or a train of cars—namely, the pit or safety lamp. And so by watching the motions of a point of light upon the plate passing to and fro along the roads and about the face, it will be possible to tell by wireless photography how the general work of the mine proceeds. Failure of a point of light to follow its proper course would indicate an accident or trouble, which wireless telephony will locate instanter.

Wireless transmission of power carries with it the obligation of lighting installations, movable and complete, kept in each working place and carried forward with it in its progress. The portable electric lamp will also become much simpler and be chargeable at places underground to be maintained for that purpose. And since light implies greater safety and more work, the use of these instruments will and must increase. Safety will be provided for by the construction of the portable lights, they being of such a strength and design as to make the possibility of breakage infinitesimal and even in that event an instantaneous cut out of the current will be employed.

It seems possible that the day of the flame safety lamp is nearing an end even in our own time, and that that of the electric lamp as we know it in its present form has dawned; but as with other notions and inventions that have had their day, so the electric safety lamp may be expected sooner or later to pass into the limbo of forgotten things in the years yet to come. Nor does it seem likely that it will have the length of life that has been accorded to its present rival, the flame safety lamp. As progress is attained coming events move faster.

Centralization Will Still Be Practiced

As with present power systems, the tendency in mining in the days to come will still be to centralize; collieries will grow larger and outputs immense. Even now these possibilities are among the established problems of the day and we think understandable and measurable by modern standards. In certain mining districts it is already said that the limit in depth of operation has been attained, but it may be supposed that improvements in the strengths of material utilized for all purposes will take place to meet these conditions and prolong the date of absolute collapse. Still a time is coming when shaft work will of necessity have to undergo radical alteration in principle.

Many years ago there was tried in France a method of pneumatic hoisting and although successful, it was then as much before its time as was the building of the steamship "Great Eastern" before conditions had arisen to make her a possible economic success. The application of many material inventions is more a matter of evolution than of unexpected or accidental discovery. The pneumatic system depends on the creation of a pressure and the establishment of a vacuum on opposite sides of a piston operating within an airtight circular casing. It presents possibilities in the solution of hoisting problems that doubtless will be worth trial, or at least a careful study. Under this system, when the proper time arrives, hoisting engines will be replaced by vacuum and pressure pumps.

We have yet also to juggle with the electric motor as we know it now, and transpose the rotary motion of this machine into longitudinal and, in this case, vertical motion, control of the latter being as at present through a board system. Or what is to prevent the wireless operation of an independent motor unit working vertically instead of horizontally?

Again, there is still another means of solution through the application of the principles of the explosive engine, making the work to be accomplished take place not outside the cylinder but inside it.

A Substitute for Pumping

Let us go a little farther and admire a modern pumping plant. Alas, the day of its disappearance too is drawing near. Watch the easy rotation of the turbine pump and the power at its command, but look at the various mechanical parts involved and the losses of transmission in motion. First a current is attached with various precautions to a wheel, which thereupon revolves. This in proper sequence operates another wheel, to which blades are fixed. In the course of their strenuous efforts to rotate with the wheel, these blades create a vacuum at first, which the water obediently rushes to fill, and this vacuum we turn to pressure through proper design of the containing chambers and the blades. And so the water is forced through a long pipe to the surface.

Well—take a deep breath here—electrochemistry has not yet told us much about the electrolysis of water and its dissolution into its constituent elements, nor has this process yet been thought of as much beyond a scientific curiosity. But even if yet only a laboratory experiment, we recommend the devotees of that science to consider the possibility of the use of wireless current of sufficient capacity and type, but not at the present power-cost ratio, at fixed electrodes designed to convert large volumes of water within a suitable and movable receptacle into its constituent gases. From this space these gases can flow with only a modicum of assistance and low friction to their destination and still be utilized there as a source of power.

We are aware that the foregoing is a regular "Baron Munchausen," but "the worst is yet to come."

A step farther takes us into methods of mine working. Admittedly the extraction is the process in which the costs exceed what is even now considered more than present economics can stand. Looking back on today from tomorrow, it seems a sad commentary on our boasted knowledge that we still mine and have mined a large proportion of our coal by hand.

We have at present the coal cutter in its various forms as yet incomplete, we have the underground coal conveyor beginning its career, and we have the loader still in its infancy; but despite this possible advance, we still extract our coal in a large proportion in two operations, and the cost of one adds the other as costs have done

from time immemorial. Machine-mining design is straining at the "cord of conservatism," but is held in leash by the fact that we still insist that machines must be designed suitable for use with coal-mining methods pursued under the old hand system. We as yet fail to see that the type of working of the future must alter radically to what the machine demands.

The future method of extraction must be based upon the machine and not the machine on the method of working. A tremendous power is possessed by the much reviled roof of any working. This power no one has yet learned how to control or thought of as a means to apply to a useful purpose. In hand-mining operations this force necessarily wastes itself in local spots where it becomes a nuisance, a trouble and a danger. When, however, it is recognized that this pressure in the roof can be utilized, and that by suitable design of the workings proper proportion can be maintained between pressure and distance, and character of supports, then we approach something "we haven't seen before."

Proper use of this pressure means the explosiveless breaking down of the coal, and so we get one step toward greater and more economical extraction.

Once this is understood, there appears to be no real reason why the extraction of the coal should not be a parallel to the reaping of a wheat field, where the grain is cut in swaths. A coal cutter followed by a loader, delivering to a conveyor alongside and it in turn discharging into the cars at the road head—one machine following the other in regular succession—represents continuous operation in the getting of the coal and the best system of mechanical extraction that it is possible to conceive under the light of present knowledge.

When Fuel, as Such, Is No Longer Used

But there is a day which is beyond that and beyond even the control of a tramway system by wireless means, and that day will begin when the demand for coal ceases to be as at present; when electricity steps in to take the place of the fuel itself. When that day dawns there will no longer be any necessity to produce lump coal; dust-burning boilers constructed on the theoretical burning capacity of any coal will be in use and the fuel, instead of being screened, will be delivered to a breaker. This crushing will take place within the mine, and the fine coal dust will be passed through and extracted from the workings by a powerful suction system. The need for economical cutting and handling as known at present will pass into the region of "forgotten things," and coal extraction will become a tearing-out process on a large scale—a state of affairs that will justify the employment of more powerful extraction machinery, but of a different type.

Still farther in the future lies the suggestion that the power required and extracted from the coal will be produced underground, and instead of the electric power being sent downward wirelessly to the mine below, the process will be reversed and the mine will deliver the power wirelessly to the surface above. This implies small high-powered generating stations of novel design, in which length will be substituted for height and width. It also implies the absolute and complete combustion of the fuel in the furnaces to be used, the noncombustibles and ash being withdrawn by suction. It further suggests that these power stations will have to be traveling units built on the tracks of the mine, the forward end being the receiving mouth for the fuel delivered from the pulverizer and the rear end delivering the wireless output. The collection of power produced will be solved through the erection of collection and storage stations on the surface.

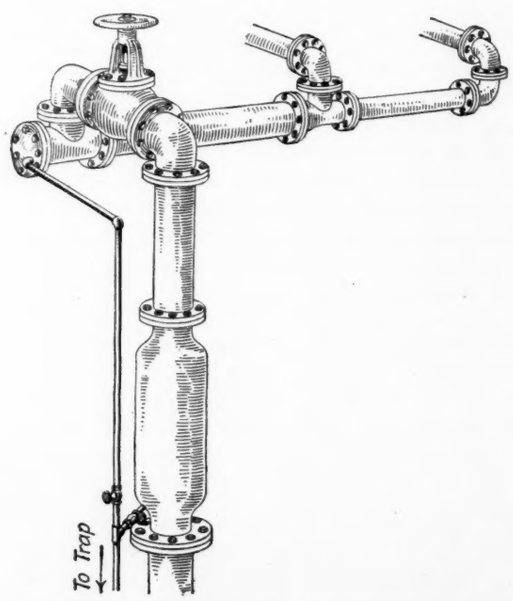
In reading over these "romances" we ask you not to laugh. Many a truth has been uttered in jest. Remember that he would have been an admitted crank who would have spoken of the wonders of air navigation or the wireless telegraph 20 years ago. Let us see what the next two decades will produce in mining.

Draining Steam Lines

In laying out piping plans for power plants, I believe engineers are placing entirely too much dependence on traps, says Howard G. Schuler in *Power*.

The illustration shows the piping layout for a small municipal plant as designed by a firm of reputable engineers. The header is drained through a ¾-in. line, which also drains the separator and is connected to a trap below the floor. If the header drain valve should be closed or the trap should fail to work, water would gradually enter the 6-in. header and by a sudden rush of steam would be picked up and carried over into the engine unless the separator was unusually large.

A sediment chamber in the line, drained to the trap, will eliminate the danger if kept clean by being blown



ONE TRAP EXPECTED TO DRAIN TWO POINTS

out once in a while. Few engineers insist on having sediment traps, and few realize that the diameter of the opening from the average so-called ¾-in. steam trap is only about ¼ in., or $\frac{5}{16}$ at most.

Steam traps are generally placed where they are not easily accessible and given very little attention, although their function is important. They should be inspected and overhauled just as regularly and perhaps a little more often than any other appliance in the plant, and certainly more frequently than they usually are in the average plant.

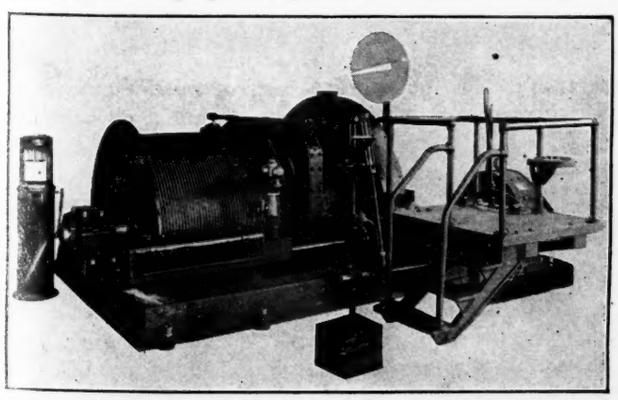
The Webb Hoist Recorder

Among the various appurtenances for hoist and haulage equipments to appear on the market of late is the Webb Hoist Recorder. It is manufactured by the S. C. Webb Co., of Wilkes-Barre, Penn. Although it has been on the market for the past 18 months, this instrument has not been given wide publicity, because it has been going through stages of perfection while in actual service. At the present time, however, it is being introduced into every mining field in North America and is in service from Nova Scotia to Arizona.

While the machine is offered primarily to aid the mine operators to attain a better degree of efficiency, it has other advantageous features. It has proved itself of great worth in case of accident and has had a good effect on the morale of the hoist operators and cagers for it produces an unquestionable record on a clock-driven drum to which is attached a cross-section chart. On a shaft in front of the drum is the ink pen, which is adjusted at the factory to a given travel, its ascent and descent being governed by like movements of the cage or skip. Thus the constant movement of the instrument's drum records continually the position of the cage or skip whether idle or in motion. The chart is so ruled that each perpendicular space represents one minute, while the spiral lines assist in making readings when hoisting from different levels. The pen is driven or regulated by chain-and-sprocket drive from the hoist-drum shaft, or any other shaft whose direction of rotation coincides with the main shaft, and of course always moves whatever may be the method of lowering the cage.

THE RECORDER ITSELF

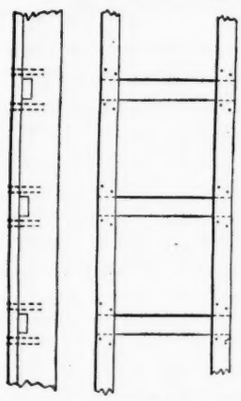
The drum is inclosed in a metal hood with a glass front. The recorder is mounted on a neatly finished cylindrical metal pedestal of a height sufficient to bring the record to a proper range of vision and also to make it easily accessible for chart changing. The only attention this instrument requires is the daily change of chart and proper oiling. The entire apparatus is neatly constructed, compact, accurate and durable.



RECORDER ATTACHED TO AN ELECTRIC HOIST

A Ladder for Wet Raises

The accompanying illustration shows a ladder for use in wet raises, suggested by John Hughes, a foreman in the Copper Queen. There are a number of cases where acid water eats up the nails in the ladder rungs, causing the rungs to fall off, making them dangerous when anyone attempts to go up or down. This arrangement eliminates such danger because the strip on each side of the ladder holds the rungs and prevents any of them from falling out. Of course the strips are also nailed, but there would be less chance of all the nails on the strip failing than in the usual arrangement in which the rungs are nailed on instead of being countersunk.—Charles Mitke in *Engineering and Mining Journal.*



LADDER WITH COUNTERSUNK RUNGS

Explosion at Coalmont, Ala.

By R. Gibson*

A local mine explosion occurred at the Helena-Cahaba Mining Co.'s mine at Coalmont, 20 mi. south of Birmingham, in Shelby County, at noon of June 15. The entire force of men was at work in the mines at the time of the accident. The explosion occurred in the eighth right heading, and all the men were ordered out.

Immediately after the explosion a rescue party was organized by Tom Tinney, the mine superintendent, and he had all the men out alive inside of two hours. Four were badly burned, as they were working in the entry where the explosion occurred. The cause of the explosion was a blownout shot in the aircourse, the shot having failed to do its work.

The coal bed runs from 3 to 4 ft. in thickness, has two partings in it and is shot off the solid. The rooms are driven to the raise, and all entries are driven across the pitch from the slope. The seam dips to the west at an angle to the horizontal of 30 deg. After the men were all out of the mine, a fire was discovered in the sixth right heading, which was soon placed under control.

G. W. Postel, the superintendent, and W. B. Brown, the mine foreman of the Eureka Coal Co., rendered Mr. Tinney assistance that was much appreciated.

This is the second disaster that has occurred in the State of Alabama within three years, both being caused by Italians. The other explosion occurred at Acton. My experience is that Italians cannot be safely allowed to work in these coal fields, because they cannot talk or understand English, and have no experience in mining. They have to be watched closely to see that they use proper judgment in breaking down the coal

Inspection of Gaseous Mines—M. H. Fies told the Alabama Coal Operators' Association that places in gaseous mines should be inspected 2 hours before the miner enters and that the mines should be managed with the view of letting the miner having "absolutely nothing to do with the gas."

*Helena, Ala.

The Composition of Natural Gas

By James Ashworth*

SYNOPSIS—Mining Engineer, James Ashworth, rebukes the severe criticism of the Clapp report on "Petroleum and Natural Gas Resources of Canada," by the editor of the "Canadian Mining Journal." Mr. Ashworth suggests that the firedamp of coal mines may and often does contain other hydrocarbon gases and free hydrogen, which add to the dangerous character of firedamp mixtures. He urges more careful analysis of mine gases.

My attention has been drawn to an editorial that appeared in the *Canadian Mining Journal,* Feb. 15, p. 86, under the caption, "An Inaccurate Report." I notice the writer of the editorial criticizes in no measured terms the recent report of Dr. Frederick G. Clapp and others, issued by the Department of Mines at Ottawa, in two volumes entitled "Petroleum and Natural Gas Resources of Canada." After expatiating on the size and general style of the publication and remarking on numerous alleged inaccuracies contained therein, the editorial closes with the following statement:

Some things, however, are obviously wrong. Analyses are given in several cases that cannot be correct, as they show constituents that do not exist in natural gas. Carbon monoxide, hydrogen and heavy hydrocarbons or illuminants, it may safely be said, are never found in natural gas. The best chemists, even 20 or 30 yr. ago, never gave them. . . . There can be no doubt that an analysis of natural gas showing 8 per cent. hydrogen should be discarded altogether. . . . Surely, there must be some way of curbing this kind of thing before we are smothered by the mass of publications ever flowing from the press.

The analyses to which the editorial writer takes exception are to be found on pp. 321, 334 and 340 of Doctor Clapp's report, Vol. 2. They are as follows:

Analysis of natural gas from Morinville, Alberta:

Illuminants	0.1
Oxygen	0.5
Carbon monoxide (?)	0.3
Hydrogen (?)	8.7
Methane	90.2
Nitrogen	0.2
Total	100.0

Analysis of natural gas from central Alberta:

Oxygen	0.1
Heavy hydrocarbons	1.8
Methane	86.7
Hydrogen (?)	5.4
Nitrogen	6.0
Total	100.0

The report then gives, on the same page, a comparison of the analyses of natural gas from the Caddo field, in northern Louisiana, and that from Point Albino, in the Province of Ontario, Canada, as follows:

	Caddo Field, Louisiana	Point Albino, Ont., Canada
Methane	95.00	96.57
Nitrogen	256	2.69
Carbon dioxide	2.43	
Sulphur	0.01	0.74
Totals	100.00	100.00

On page 334 is found the following analysis of natural gas from Wetaskiwin, Alta., Canada:

Illuminants	0.1
Oxygen	0.5
Carbon monoxide	0.3
Hydrogen	8.7
Methane	90.2
Nitrogen	0.2
Total	100.0

*Mining engineer, Vancouver, B. C., Canada.

On page 340 of the report appears the following analysis of natural gas obtained from a boring of the Calgary Natural Gas Co., in East Calgary, near the Bow River:

Oxygen	0.1
Heavy hydrocarbons	1.8
Hydrocarbons of marsh-gas series	86.7
Hydrogen	5.4
Nitrogen	6.0
Total	100.0

Still another analysis of natural gas in Alberta is given on page 320 of the report, which is as follows:

Oxygen	0.14
Methane	98.55
Nitrogen	1.41
Total	100.10

The report states that the analysis of natural gas at Medicine Hat shows it to be composed almost entirely of methane, the gas having a heat value of 1,100 B.t.u. This is compared with the heat value of natural gas from other localities and sources as follows:

	B.t.u.
Medicine Hat	1,100
West Virginia	1,145
Ohio and Indiana	1,095
Kansas	1,100
Coal gas	755
Water gas	350
Producer gas	155

The editorial refers to Bulletin 42 of the United States Bureau of Mines, prepared by Messrs. Burrell and Seibert, as showing that these authorities found no heavy hydrocarbons in natural gas, and with this slight support of his opinion, the writer has ventured to criticize in a drastic manner the latest report made on this subject by other eminent authorities. One gathers from the argument that the editor of the *Canadian Mining Journal* is of the opinion that real natural gas is or should be pure methane, or what is often familiarly called "firedamp."

Permit me to state that I have often suspected the presence of free hydrogen in the firedamp of coal mines and have come to believe that many explosions of gas in mines have been precipitated by reason of the presence of hydrogen in the gas being tested by mine officials in the ordinary course of their work. It will be generally agreed that no flame safety lamp yet made can prevent the transmission of the flame through the gauze due to the explosion of a mixture of hydrogen and air within the lamp chimney.

Let me urge that this subject needs following up very carefully. The published reports of reliable authorities, showing analyses of natural gas, should not be indifferently treated or exposed to unreasonable criticism. Permit me to say that I am absolutely sure that ethane (C_2H_6) as well as other hydrocarbon gases, is found in very considerable percentages in some coal mines. It will not be denied that the presence of such gases mixed with methane or marsh gas (CH_4) is a serious factor in the consideration of safety in mines. It is worthy of note that the earlier publications of the Correspondence Schools at Scranton, Penn., gave the explosive mine gases as marsh gas (CH_4) and olefiant gas (C_2H_4), but their later books include among these ethane (C_2H_6).

I have always attributed the presence of the higher hydrocarbons in coal as due to the occurrence of petroleum, believing that these hydrocarbons are bottled up in liquid form in the coal. I have ascribed the huge out-

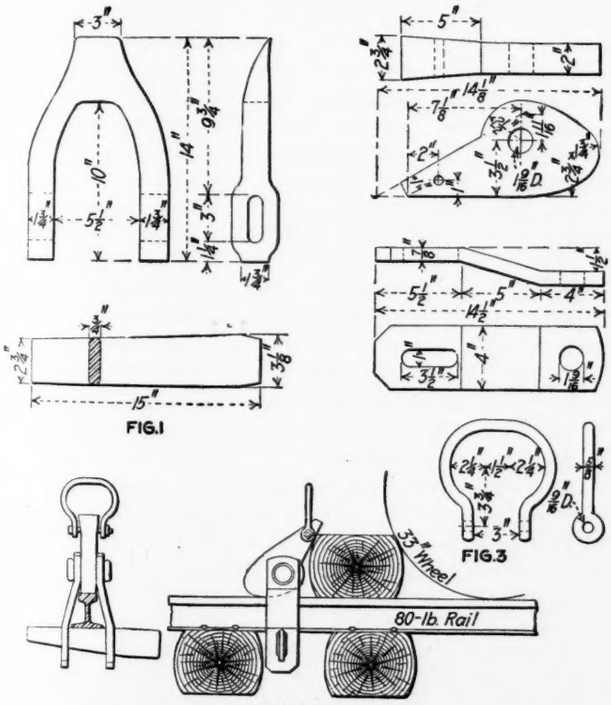
bursts of explosive gas that only too frequently occur in certain coal mines as being due to the sudden volatilization of these hydrocarbons, which pass instantly from the liquid to the gaseous form, in the process of escaping from the coal.

It has happened too often that analysts of mine gases have failed to look for other hydrocarbon gases, but have included all these under the general term methane, which would appear to be the accepted conclusion of the writer of the editorial to which I have referred. I earnestly hope that the subject of the composition of natural gas will receive the careful consideration that it deserves. The presence of carbon monoxide in natural gas is also questioned, and this may call for careful investigation before it can be asserted with confidence that this gas is never present as an occluded gas in coal measures.

Rail Clamp for Steam Shovel

By L. D. Davenport

Fig. 1 shows the ordinary rail clamp used in many of the openpit mines on the Mesabi Range, to block the wheels of steam-shovel trucks. A tie is ordinarily used for a block and is placed between the clamp and the wheels. These clamps fit loosely over the section rail and are tightened by driving steel wedges between the clamp and the ball of the rail. The improved clamp shown in Figs. 2 and 3 has been in use for several years



DETAILS OF RAIL CLAMP USED TO HOLD STEAM SHOVEL

in one of the Hibbing district openpits and has proved entirely satisfactory. The important feature of this clamp is the cam which rests on the ball of the rail and is tightened by the pressure of the block against it, doing away with the wedges used on the ordinary type. The handle on the top of the cam offers a safe and easy means of handling the clamp.—*Engineering and Mining Journal.*

Extracts from a Superintendent's Diary

The woods are full of efficiency experts these days and there is not a branch of any business that they are afraid to tackle. Some of them are as persistent as book agents and insist on a chance to demonstrate their abilities irrespective of an employer's convictions or wishes in the matter.

Many of them are men of undoubted ability, but the great majority with whom I have been thrown are misguided geniuses, alternating occasionally with a faker pure and simple. Of the last two types it is hard to say which is the more dangerous.

They come in all ages from young fellows just out of college to gray-haired men grown old in the line of work that they now propose to revolutionize. Here again it is hard to say which type is the more dangerous.

Personally I have been opposed to the efficiency men making studies of the laborers inside and out at our mines, but if they confine their investigations to our machines or mining methods I withdraw my objection. However, my wishes in the matter are not always law; in fact, on several occasions we have had to live through long sieges of motion-time studies covering every laborer from shovelman inside to railroad cartrimmer under the tipple.

A very competent efficiency expert has just finished an extended investigation of our entire plant inside and out; he was employed at the suggestion of our board of directors and will report directly to them; when they receive his report, they will be far from pleased with the fruits of their suggestion, or I miss my guess.

To be sure he discovered glaring instances of inefficient labor distribution and planning and criticized some of our company men unmercifully, but in most instances losses occasioned by the inefficiencies that attracted his attention fall entirely upon the shoulders of the employees and not upon the company. Furthermore because of his investigations some of our miners are beginning to think it is up to the company to make radical changes.

From almost the first day after the investigation began the expert commented on the amount of time the miners lost waiting for empty mine cars, and probably because of the fact that he had never been in a coal mine before, nothing that I could say seemed to convince him that the same condition was characteristic of all coal mines. At any rate, when he left he remarked that never before had he encountered any kind of an operation that would stand for so much lost motion. He even went so far as to say that he doubted if its equal could be found anywhere. The fact that he found no remedy to apply meant little to him, because he was not expected to be able to suggest changes in the short time for which he was employed.

Were it not for the fact that several of our directors are practical coal-mining men, I would expect him back in a few weeks armed with a commission to camp with us until he could suggest remedies for all our imperfections. As it is, I anticipate that when the expert submits his report to the board, he will be promptly dismissed.

During the time that he was with us we did not have any idle days due to car shortage or petty strikes. I am wondering what would have been his opinion of the efficiency of the coal-mining industry if he had run into a few such idle days.

Comparative Quality of Oil

By G. A. Smith

The consumer always wishes to purchase the best oil for the least money, and the quality of a certain grade of oil being undeterminable to the eye, resort is had to practical, physical and chemical tests, such as specific gravity, degree Baumé, weight per gallon, refractive index, viscosity at 70, 120 and 180 deg. F., flashpoint, burning point, congealing point, color density, carbon content and free acid. There are manufactured in all commercial products such as oils of a supposedly certain grade, superior and inferior grades, sometimes perhaps beyond the control of the maker. Usually, however, the maker knows to whom he had best ship the inferior grade; his knowledge of this being based upon the fact that there is no inspection at the point where the inferior grade is shipped. I recall an instance where the price asked per gallon of 90-per cent. quality oil was the same as that paid for supposedly the same grade which had 64-per cent. quality.

After having carried on extensive tests of oils for gas and gasoline engines that were submitted by about twenty companies, I found it desirable to establish a rating or percentage of quality. This was arrived at as follows:

RULE FOR RATING OILS

A. Viscosity at 120 deg. F. × 1
Viscosity at 180 deg. F. × 10
Flashpoint × 1
Multiply and add the products.

B. Congealing point × 1
Free acid × 100
Carbon content × 100
Multiply and add the products.

Subtract B from A, divide by 5 and then multiply by the specific gravity. The result is the percentage of quality.

If the viscosity at 70 deg. F. is considered, divide 100 by this figure and add to the quantities in A.

Example:

Viscosity at 120 deg. F.	1 ×	2.09 =	2.09
Viscosity at 180 deg. F.	10 ×	1.22 =	12.22
Flashpoint	1 ×	402 =	402.00
			416.31
Congealing point	1 ×	20 =	20.00
No free acid			
No carbon content			
		A — B =	396.31

396.31 ÷ 5 = 79.25
79.25 × 0.901 = 71.40 per cent.

Out of ten heavy crank-case oils computed in this way the quality varied from 96.94 to 50.94; of twelve crank-case and gas-engine oils the quality ranged from 80.5 to 56.94; of nine motor and automobile oils, from 73.27 to 60.24.

It is of course necessary to change the factors in the rule to suit the characteristics of various oils, such as cooling, thread-cutting, spindle, dynamo and special oils; or by using a fixed rule, one will see that oils with various characteristics are divided into classes after analysis.—*American Machinist.*

The Coal Industry's Interest in Timber Creosoting

By J. Crow Taylor*

An example of the mutual or interlocking interests of various of our important industries is furnished by the use of creosote, a byproduct of coal, in the treating of timbers of various kinds as well as paving blocks. The coal industry has a direct interest in the development of this business because the extent of its expansion marks just so much increase in the consumption of creosote, which is a byproduct of coke making.

According to figures recently compiled by government authorities and the Wood Preservers' Association, there are 102 creosoting plants in the country, which in 1915 treated a total of 141,858,693 cu.ft. of timber. This treatment called for 80,859,442 gal. of creosote, 33,269,604 gal. of zinc chloride and 4,899,107 gal. of all other preservatives, which included crude oil, coke-oven tar, refined coal tar, carbolineum oils, etc.

Of the creosote oil used in 1915, 54 per cent. was domestic while 46 per cent. was imported from Germany and England. Of the domestic creosote, 41,333,890 gal. was coal-tar creosote and 2,024,545 gal. was water-gas tar.

One point worthy of notice here is the large percentage of imported creosote used in 1915. Even at that the importation was 27 per cent. below that of the previous year because the war in one way and another curtailed our imports. The consideration of particular interest to the coal trade in this country in this connection is the possibility of development in domestic creosote-oil production until we can supply the domestic demand, and the possibility of development or expansion in creosoting timber products that will make a larger demand for creosote oil.

The timber-creosoting business in the United States is divided between cross-ties and other railway material and paving blocks. There are many lines in the process of development, including fence posts, barn timbers, etc., but so far the main development of the industry has been in connection with ties, bridge timbers, piling and other railway material, poles and crossarms for telephone and telegraph wires, and paving blocks.

For the past year or two railway development in creosoting has been held down considerably, but this gives promise of expansion under the stimulus of prosperous times. And this expansion will come by virtue of the fact that the treatment justifies itself by lengthening the life of the timber used.

In the paving-block industry there is such rivalry between the different materials used that it constitutes a factor and brings in the item of cost. Wood paving has made considerable progress and is expected to make more, much more, in fact. The one serious handicap to its progress is the cost, the main item in which seems to be that of creosoting.

According to figures of one of the most successful city engineers in the country covering the use of wood block for paving, the wood block alone costs from $1.50 to $1.60 per square yard. It is readily apparent upon analysis that the large item in this cost is made up of the creosoting treatment. Creosote oil itself is not expensive, but the process of treatment so far has proven rather costly.

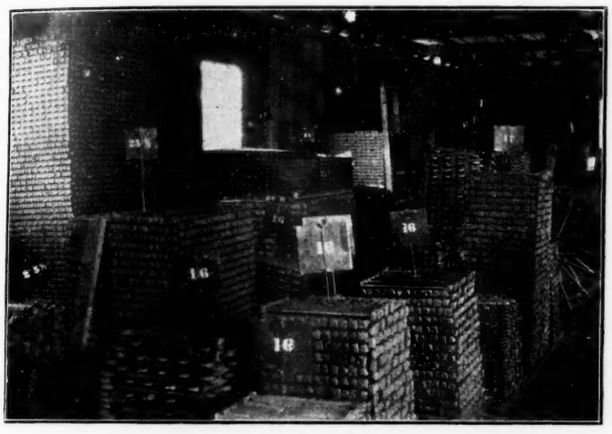
There is enough at stake here for the coal industry to make it worth while for it to coöperate with the wood-preserving branch of the lumber industry in research work, to develop ways and means for more economical treatment and distribution, especially in connection with wood paving blocks, which have to meet the competition of brick and asphalt and are at present more expensive than either of the latter. A reduction of cost here will lead to a great expansion in the paving-block industry and would increase consumption of creosote oil.

*Louisville, Ky.

While the total of lumber and timber of all kinds treated in 1915 was somewhat lower than in 1914, it is admitted that the wood-preserving industry is expanding at a good rate. The main losses of last year were in railway ties and piling, and it is expected that these will be more than made up for in the next year or two. Meantime there is an increase in the quantity of wood paving blocks being treated, in construction timbers and in posts and timbers for farm use.

A Neat Bolt Storage

Much of the value of having a good supply of bolts is in being able to find them when wanted, says *American Machinist*. The illustration shows the system adopted



SANTA FE SYSTEM OF BOLT STORAGE

by the Atchison, Topeka & Santa Fe Ry. at Arkansas City, Kan. The bolts are neatly stacked and labeled, as can be seen, making it easy to select the size wanted and to know how many are in stock.

Explosives Advance in Price

Much has been published lately regarding the difficulty of securing dyestuffs in this country as well as in obtaining the ingredients used in the manufacture of other standard commodities, but it is not generally known that this applies also to materials used in the manufacture of dynamite, black powder and other blasting explosives. As a matter of fact, the price of most of these materials has increased enormously, and if present war conditions continue in Europe for any length of time, it is doubtful if it will be possible to obtain some of them at any price.

This is particularly true of glycerin, which, with sulphuric and nitric acid, is used in the manufacture of nitroglycerin, one of the principal explosive ingredients of all high explosives used in mines and quarries. Glycerin is a byproduct in the manufacture of soap and while much of it is produced in this country, more than half of that used in the manufacture of nitroglycerin and other commodities in this country has been shipped here from Europe.

All the glycerin made in Europe at the present time is being used there in the manufacture of war munitions or is being stored so that it can be utilized for that purpose in the future. England and France, which, before the outbreak of the war, were the principal exporters to this country, have placed embargoes on the export of glycerin.

Dynamite manufacturers believe that before long it will be entirely impossible to secure enough glycerin to make the dynamite needed in this country and are experimenting with new explosive materials as substitutes for nitroglycerin.

The market prices of the principal materials used in the manufacture of dynamite, permissible explosives and blasting powder have increased roughly as follows: Sulphuric acid, 6-fold; nitric acid, 2½-fold; glycerin, 4-fold; nitrate of ammonia, 2½-fold; saltpeter, 3½-fold; and nitrate of soda, 20 per cent.

This increase in cost of ingredients has naturally resulted in an advance in the price of all blasting explosives and blasting supplies. The price of dynamite, permissible explosives, blasting powder, blasting caps and fuses, blasting machines, fuse, etc., has already been raised several times this year, and the present outlook indicates that these increases will continue until the supply and demand become normal again.

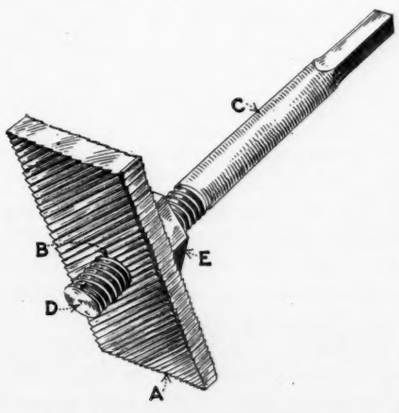
The advance in the price of 40-per cent. dynamite since September, 1915, has been over 80 per cent., and on the higher grades the advances range from 100 per cent. to 120 per cent. During this time black powder shows an increase in cost of 23 per cent., permissible explosives 35 per cent. and dynamite caps 200 per cent.

Notwithstanding these increases, the anthracite operators have sold powder and blasting supplies to their miners at the same prices that prevailed four years ago, and under the wage agreement recently made they have bound themselves to continue these prices for the ensuing four years. It therefore follows that the advance in cost is paid for by the operators and constitutes a material item of expense in addition to the wage increase. The effect will vary at different operations according to the quantity and character of the explosives used, the average at the present time being about 3c. per ton of output, or $2,000,000 for the field annually.

Facing Up Pump Valve Seats

In truing up the valve seats of pumps, etc., when no grinding outfit is at hand, the following method has proved of great value, says Charles Bergmark in *Power*.

Anneal a flat file and cut a piece *A* long enough to cover fully the seat of the valve to be ground. Drill and tap a hole *B* in the center for a ⅜-in. bolt, then reheat and temper it. Cut the head off a ⅜-in. bolt *C*, 4 to 6 in. long. Run the bolt down through piece *A* and extend it through ¼ to ⅜ in. to form a guide to steady the grinder when in use. A locknut set up tight holds the cutter fast to the stem, which is squared at the opposite end. By placing it in a brace or breast drill a nice job can be quickly done.



TOOL FOR TRUING UP BRASS VALVE SEATS

Byproduct Coke Producers' Annual Meeting

Following out the plan of the preliminary conference in Chicago last January, the Byproduct Coke Producers of America held their first annual meeting in Boston, July 14 and 15. Young's Hotel was the rendezvous, and practically all of the important byproduct oven plants in the East and the Middle West were represented. The members were enthusiastic over the idea of a national organization and felt that much good would come from it.

The gathering this time was to get thoroughly organized with suitable committees and in other ways to set forward some effective work for the benefit of the industry. For that reason there were no technical papers; discussion for the most part was confined to the proper scope of such an association and plans to promote a more extensive distribution of coke as a desirable fuel throughout the country. Committees were appointed to consider ways and means of carrying out these aims, and a committee of experts was appointed to standardize the sizes intended for domestic use. The members felt that the latter object alone would more than justify the new organization.

The association is not for the present to go into the field of other coal byproducts: it is going to adhere strictly to byproduct coke for foundry and household purposes, and all its plans are laid out on these lines. It includes among its members those engaged in the manufacture of vertical retort coke.

A report covering the work of a publicity committee was presented in some detail. A comprehensive campaign of newspaper advertising is being considered as well as other methods of putting coke before the public as an economical substitute for coal. A motion picture of a large byproduct coke-oven plant was displayed as among the possibilities of a campaign of education.

J. D. Forrest, Indianapolis, presided and was reëlected president; W. H. Ball, Syracuse, was made vice-president; and W. J. Lavelle, Boston, is secretary and treasurer.

There was an enjoyable luncheon at Young's, and at the close of the afternoon meeting on the 14th the members were guests of the New England Coal and Coke Co. on a sail down Boston Harbor to Nantasket Beach. A shore dinner was served at the Villa Napoli in Paragon Park, and both dinner and cabaret were voted a great success.

The forenoon of the 15th was devoted to an inspection of the Everett works of the New England Gas and Coke Co. Every part of the huge plant was shown the visitors, a special train being provided to take them from one point to another through the courtesy of the New England Coal and Coke Co. and its representatives. The return to Boston was in time for the afternoon Western trains, although it was apparent most of the members intended also to visit "little old New York."

The next annual meeting is provisionally arranged for Detroit, in April, but the bylaws provide that other meetings can be held on the call of the president. A committee is already working on a program of technical papers to be submitted at the next gathering. It is felt that the association has embarked on a career of great usefulness to the byproduct coke industry.

Among those present were: J. D. Forrest, president Citizens Gas Co., Indianapolis, Ind.; W. H. Ball, Semet-Solvay Co., Syracuse, N. Y.; W. J. Lavelle, Northeast Coal and Coke Co., Boston, Mass.; P. H. Woods, M. H. Warren Coke Co., St. Louis, Mo.; W. H. Blauvelt, Semet-Solvay Co., Syracuse, N. Y.; J. A. Galligan, Pickands, Brown & Co., Chicago, Ill.; C. H. Jenkins, The Domhoff & Joyce Co., Chicago, Ill.; Carroll Miller, Coal Products Manufacturing Co., Aurora, Ill.; D. MacArthur, Seaboard Byproduct Co., Jersey City, N. J.; N. Anderson, Debevoise-Anderson Co., New York, N. Y.; P. N. Bogart, Indiana Coke and Gas Co., Terre Haute, Ind.; C. Sonne, Indiana Coke and Gas Co., Terre Haute, Ind.; F. W. Miller, Rogers, Brown & Co., Cincinnati, Ohio; T. V. Salt, Allegheny Byproduct Coke Co., McKeesport, Penn.; C. C. Marvel, Semet-Solvay Co., Geneva, N. Y.; G. E. Crosby, Jr., Eaton, Rhodes & Co. Cincinnati, Ohio; D. A. Barkley, Lehigh Coke Co., South Bethlehem, Penn., and J. R. Schurz, Camden Coke Co., Newark, N. J.

Why Blast with Fuse and Caps?

During the summer months coal-mine operators have more time than in the winter to consider the introduction of new mining methods. What better improvement could be made than to install and adopt the electric method of firing explosives instead of the old way with fuse and blasting cap? It is true that in most of the modern and uptodate mines electric firing and permissible explosives have been adopted. There are some, however, still lagging behind. Few mines exist in which conditions could not be made more safe and the protection of the property enhanced by the use of permissible explosives and electric firing.

According to statistics compiled by the United States Bureau of Mines, there were slightly more than 288,000 lb. of permissible explosives used in American mines in the year 1903, and the fatalities directly traceable to explosives were 0.339 per 1,000 men employed.

In 1914 over 15,000,000 lb. of permissible explosives were used and the fatality rate dropped to 0.096 per 1,000 men employed—a reduction of 72 per cent. Again in 1870 there were 13.47 fatal accidents for every million tons of coal mined in this country and in 1914 only 4.78.

This great reduction was accomplished in spite of the fact that the production of coal has been intensified by several hundred per cent. during that interim and many more men are being employed in a single mine than ever before. Also the coal mines have been developed to a greater extent and are deeper and more dangerous than in 1870. Much of the credit for this remarkable improvement is due to the use of permissible explosives and electric firing. Figures do not lie as to these improvements. That there is still room for an even better showing than that just mentioned is suggested by the fact that in European mines the death rate is much less.

The statistics of the United States Bureau of Mines also show that of all the accidents due to explosives in coal mines 25 per cent. result from premature blast caused by miners using short fuse or defective squibs. Why miners and mine operators will still persist in this antiquated method of firing explosives is hard to explain.

When explosives are detonated electrically, the maximum execution is always assured. The blast cannot occur until the miner desires it and until everyone is in a safe place. As many holes can be fired at one time as desired, so that it is possible to use less explosives per ton of coal than when the shots are fired by fuse and blasting caps.

In some mines fuse and blasting caps are used with permissible explosives. How inconsistent such a course is! Surely, if a mine requires the use of permissible explosives—and there are very few in which conditions could not be improved by their adoption—in order to har-

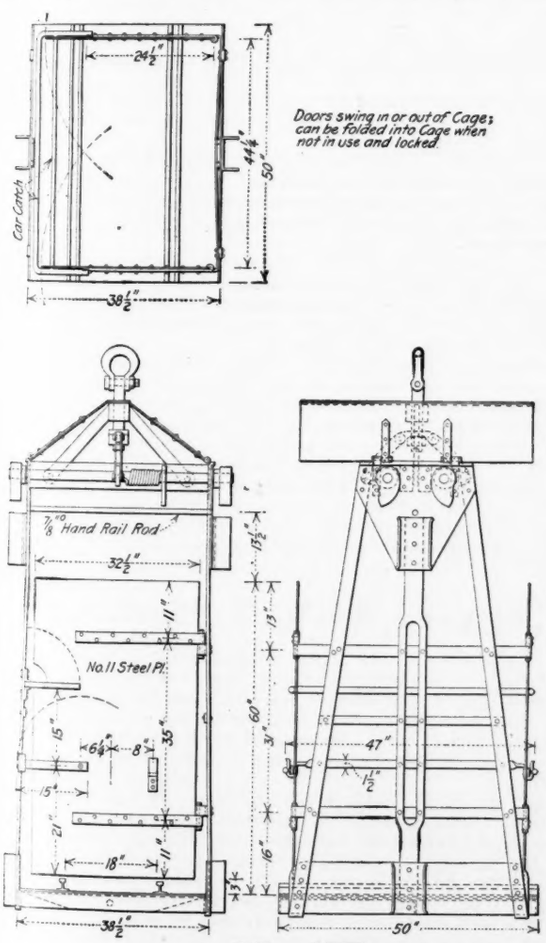
monize with this safety development, the explosives should be detonated only with electric blasting caps.

The cost of installation is low. A blasting machine suitable for use in coal mines costs about $10 and will last for years if care is taken of it. Electric blasting caps cost little if any more than fuse and blasting caps, and the expense of leading wire is small. The advantages and benefits gained greatly outweigh the small first cost of installation.

In order to make the working conditions of the miner, which at best are bad enough, better, safer and more pleasant, and in order to give added protection to the mine property, permissible explosives and electric firing should be introduced at all mines where the welfare of men and property is of prime importance.

Safety Cage Gates

A Colorado law that became effective Apr. 13, 1915, requires that all mine cages shall be equipped with gates, says Roy F. Smith in the *Engineering and Mining Journal*. The ones shown in the sketch were designed to be installed on two light cages in use at Leadville, in order to comply with that law. They are constructed of No. 11



SAFETY GAGE CAGE

steel plate and are hung on hinges made of ⅜x2-in. steel. A ⅜x1½x15-in. latch, which drops into a hook at the side of the cage, holds the gates when in use from swinging in or out of the cage. The car catch may also be lowered when the latch is in place, thus giving additional security in holding the gates from swinging out.

When the cage is to be used for hoisting cars, the gates can be folded one over the other, into the cage, and locked in that position by engaging the latch on one gate in the door hook on the other. With this arrangement the gates in no way interfere with the operation of the car catch or the hoisting of cars and can be quickly swung into place and latched when hoisting or lowering men.

For lowering timber into the mine these doors were found to be safe, convenient and quite a saver of time over the old method of using ropes to hold the timber in the cage. Gates or doors of this type may be readily added to almost any cage, with very few alterations.

Coal Age Indexes Now Ready

Indexes to *Coal Age* are furnished free to all who ask for them. The index for the first half of 1916 can now be obtained by addressing a request for one to the subscription department, *Coal Age*, New York City.

Reorganization of Pennsylvania Coal Companies

The reorganization of the United Coal Co. and subsidiary companies, which have been in the hands of receivers for the past three years, together with the Jenner-Quemahoning Coal Co., which has been under way for several months past, has been effected by the organization of the United Coal, which took over the properties mentioned on July 1. The new concern comprises the Jenner-Quemahoning Coal Co., operating Jerome Nos. 1 and 2 mines on the Baltimore & Ohio R.R. in the Somerset county field, the United Coal Co. operating Ella and Patterson mines on the Pittsburgh & Lake Erie R.R., and the Rich Hill mine on the Pittsburgh, Cincinnati, Chicago & St. Louis R.R. in the Pittsburgh field. The company also includes the Pittsburgh & Baltimore Coal Co., operating Edna Nos. 1 and 2 mines on the Pennsylvania R.R. in the Irwin field and the Naomi Coal Co. operating Naomi mine on the P. & L. E. R.R. in the Pittsburgh field.

The new company, which is occupying the offices used by the receivers in the First National Bank Building, Pittsburgh, Penn., has elected the following directors: Tracy W. Guthrie, Pittsburgh, formerly president of the Republic Iron and Steel Co., and who has been in charge of the reorganization; A. C. Robinson, Pittsburgh, president of the Safe Deposit and Trust Co.; Robert L. McCarrell, Washington, Penn., of the Washington Trust Co.; J. H. Hillman, Jr., president of J. H. Hillman & Co., Pittsburgh, coal operators; W. A. Dyer, Chester, Penn., vice-president, Cambridge Trust Co.; H. M. Breckenridge, Pittsburgh; J. H. Beal, of Read, Smith, Shaw & Beal, Pittsburgh; Henry Chalfant, of Spang, Chalfant & Co., Inc., Pittsburgh; Henry M. Watts, of Robert Glendenning & Co., Philadelphia; and Stuart H. Patterson, vice-president, American Water-Works and Electric Co., New York, N. Y.

The officers are Mr. Guthrie, president; Mr. Robinson, vice-president, and Mr. McCarrell, secretary-treasurer. Edward H. Coxe, who recently came to Pittsburgh from Knoxville, Tenn., has been appointed assistant to the president. W. C. Huber, Philadelphia, Penn., who has been manager of Eastern sales under the receivers, has been appointed manager of sales, with headquarters in Pittsburgh.

COMING MEETINGS

The American Mining Congress will hold its 19th annual session during the week beginning Nov. 13, 1916, at Chicago, Ill.

Michigan-Ohio-Indiana Coal Association will hold its annual convention at Cedar Point, near Sandusky, Ohio, Aug. 1, 2 and 3. Secretary, B. F. Nigh, Columbus, Ohio.

Illinois and Wisconsin Retail Coal Dealers' Association will hold its next annual convention on July 26 and 27 at Madison, Wis. Secretary, I. L. Runyan, Chicago, Ill.

The Labor Situation

General Labor Situation

The anthracite region is quiet. The Lehigh & Wilkes-Barre Coal Co.'s defense of its refusal to supply cars to contract miners in which to leave the mine, when at any time the cars were demanded by five or more men, was not accepted by the court. The company will therefore have to discharge or discipline men who insist on leaving the mine prematurely.

This was a case arising out of the 8-hr. agreement in relation to contract and other mine workers. A strike at two other mines had the same source apparently. The company refused to pay the men while the mine was working. Some men, it appears, were out of the mine early and wanted their pay during working hours. A Lithuanian local union has been suspended for expending its funds in an unauthorized strike of its members.

Western Pennsylvania Will Not Have a Strike

In Pittsburgh the miners' convention held on July 12 and following days proved so warm for the President, Van Bittner, and Vice-President F. P. Hanaway that they resigned. Van Bittner ceased even to be a delegate, being dispossessed by the union at Russelton. On July 17 the miners by a vote of 118 to 112 ratified the district agreement, having previously refused to strike by a vote of 196 to 172.

Labor and mining conditions in the Pittsburgh district are now about normal except for a general shortage of labor, most mines having not over 75 per cent. of normal working forces. All mines are working full in so far as the car supply will allow, which is about 80 per cent.

The McFetridge, Cornell and Creighton mines in the Allegheny Valley are reopened, but few men are working. Of the nine women charged with sprinkling the miners of Creighton with red and black pepper as they entered the mines some weeks ago, two, Mrs. Yusko and Mary Clevenick, have been arrested; the rest are still hiding.

Central Pennsylvania Has Scattering Strikes

In central Pennsylvania there is a strike at the Delta mine, owned by the Duncan-Spangler Coal Co. The miners object to working unsafe places with mining machines. They feel, moreover, that they would like to see all machines put out of the mines, for with the present scale they can make more money by digging their coal with the pick.

In Somerset County, which is mostly nonunion, the United Mine Workers of America are making strong efforts to unionize the mines. They have one strong local at Holsopple with over 200 members, through which channel their efforts are directed. The mines of the Knickerbocker Smokeless Coal Co., in Hooversville, also in that county, have been on a partial strike for three months past over demands for the recognition of the union and employment of a checkweighman. These mines now have about 100 men at work, which is one-sixth of their normal force, and the numbers are increasing every week.

At a meeting of the Holsopple local on Friday, July 14, 17 new members joined the union and a checkweighman was elected for the Victor Coal Co. at that place. It is expected that this company will stand a strike rather than submit to union conditions.

Thomas L. Lewis Millennium in Central States

A Thomas L. Lewis millennium appears to have settled on parts of Ohio and Illinois. Today the mine operators and workers of the Hocking district in the former state will hold a joyful celebration over the resumption of work in the Hocking Valley mines and over the recent reduction in freight rates ordered by the State Publicities Commission.

In the seventh and ninth districts of Illinois, in line with the advice recently given by Thomas L. Lewis to the Coal Mining Institute of America, the miners and operators are combining to regulate prices, to ascertain costs, to promote their common welfare and thus to live together like a happy family, excluding all those who would cut prices, slash wages by coöperative agreements and provide unfavorable working conditions. There is no reason why this should not be done. The lion of labor may well lie down with the lamb of capital —or should it be the other way? There is no need for any of their bickering.

When the board created by Rule 4 met at Cleveland, Ohio, on July 9 and 10, great harmony prevailed considering the importance and difficulty of the question involved. A settlement was reached for moving stone in block rooms, for working 15-ft. places and for loading stone in such narrow workings. The board consists of President John Moore, district No. 6, President Roy and Vice-President Ledvinka of subdistrict No. 5 for the miners, and S. H. Robbins, C. E. Maurer and Michael Gallagher for the operators.

In the Southwest the McAlpin agreement is not of binding force. The miners have only voted that it be operative for their coworkers in the central competitive field. Neither miners nor operators in the Southwest need abide by it. The miners want to modify it by leaving out the Columbus clause and by giving the longwall mines a 5c. instead of a 3c. per ton increase. Kansas operators are unwilling to concede the Columbus clause—while granting the 5c. and 3c. increases—but Oklahoma operators are more obdurate, and if they had their way they would concede nothing. Many of the Oklahoma miners know that they would be better off if Oklahoma was given the wage provided in the last contract, for work has been extremely slack. If Oklahoma could meet apart, it is believed work would continue at the former wage rate.

Anthracite Labor Troubles

The contract miners of the Lehigh & Wilkes-Barre Coal Co. have won a victory in the courts which advantages them nothing. At any time now a contract miner can quit his work, go home, draw his pay and leave the service of the company, but that is all the right he secures. If he leaves the mine during working hours without permission or reason, he should not be allowed to look for any further work from the company.

At the Sloan mines of the Delaware, Lackawanna & Western R.R. 900 men are idle as a result of a dispute as to the character of powder supplied, and the same company has 900 other men idle because some men were laid off when places in Archibald colliery were closed.

The union leaders are keeping faith at least in some matters with the companies, as was illustrated in the case of a Lithuanian union, No. 1,398 of Shenandoah. The men were expelled from the union for having paid dues from their treasury to men who were on strike in violation of the agreement. There are 1,400 men in the local, and it is the largest in the organization of the United Mine Workers of America.

At the Lehigh Coal Co.'s mines at Centralia and Lost Creek a strike took place on July 14, the men demanding that their pay be given them during working hours.

Bittner Resigns Presidency

The meeting at the Moose Temple, Pittsburgh, commencing on July 12, resulted in the resignation of President Van Bittner and Vice-President Hanaway, of district No. 5. Bittner had held his presidential office for 8 years, replacing Francis Feehan, who has for some time been chief supervising inspector of the Pennsylvania Department of Labor and Industry.

The outgoing president and his aide are both quite popular with a large number of the mine workers and might well have succeeded themselves had they not made an unwise bargain at the McAlpin Hotel, New York, with the Pittsburgh operators. The miners quite rightly urge that this agreement is not in accord with the earlier underlying McAlpin agreement, with which all further contracts had to accord.

It does not appear that there was anything but a deficiency in statesmanship in signing the second agreement; in fact, no one believes or alleges that Bittner and Hanaway did anything other than their consciences and judgment dictated. But the dissatisfaction was so severe that on July 12 at the close of the meeting both men declared that they had placed their resignations with the international executive board.

These resignations were not accepted, and the officials were asked to offer them to the convention which met again on the day following. As an outcome, the local executive board

appointed Philip Murray to fill Bittner's unexpired term as president. He is only 32 years of age, but has been a member of the international executive board for three years and previous to that time had dug coal at the Hazel Kirk mine of the Pittsburgh-Westmoreland Coal Co. He lives at Carnegie. The successor to F. P. Hanaway was not appointed.

On the afternoon of July 12 the meeting assembled. President Van Bittner presided, but he was frequently called upon to leave the chair, which he finally did, one of the international officers replacing him. He then took a seat among the delegates.

The next day Bittner resigned and asked for the full union support for his successor. Hanaway stayed away but sent his resignation. Still later Bittner was removed even as a delegate, Russelton withdrawing his name.

Snubbing Optional If Coal Is Well Prepared

It was urged by the union officers that the agreement be accepted. The Pittsburgh Coal Operators' Association has offered not to put the clause (paragraph A, Rule 10) requiring "snubbing" in force if the miners will prepare their coal in an acceptable way without it. The mine workers present believed that the concession was not satisfactory and might be a mere "blindfold." No motion was put to accept or reject the concession. Of all the side-stepping from the provisions of the McAlpin agreement, this paragraph is the least objectionable and it is at least a debatable point whether it could not be retained in the contract without offense. But the miners put as much stress on its being omitted as if it were the most flagrant of violations of the underlying document.

On July 14 the question arose as to whether there should be a strike, and many changes of heart had evidently been experienced since the earlier meetings. The position was quite strained. The international officers declared that the union as a body would not contribute a cent to strike dues. The local union was declared to be in debt. The only hope was to get money from some of the other districts that the Pittsburgh district had formerly helped. But even this seemed an unlikely source of revenue, for all the districts are supporting the international body.

After Thought No One Seems To Want a Strike

Some of the miners of the Youghiogheny Valley are ill-disposed to strike. Michael Eagan, a mild-mannered man but determined-looking, from Suterville, Penn., declared that 500 men there would not go on strike even if the convention rejected the wage-scale agreement suggested by the international board. "I know that some delegates may slur and sneer at statements I shall make, but I am here to take them good naturedly or physically." He then looked around the hall for men to whom the suggestion of physical force would appeal, but everybody desired to take him in a good-natured manner.

Even Leroy Bruce, of Roscoe, the leader of the malcontents, opposed a strike which he did not see any chance to win. He declared that the H. C. Frick Coke Co. was about to merge with the Pittsburgh Coal Co. and if that was the case, they would have an even larger company with which to contend and one that had no love for union labor. Yet one cannot but believe that if the H. C. Frick Coke Co. considered itself committed to the McAlpin agreement it would not try to sustain the secondary contract, which negatives the first.

An Expensive Strike with No Money Available

Charles McCartney pointed out that a strike would cost $100,000 to $150,000 a week, allowing only $2 a week to each man, $1 to each woman and 50c. to each child. He could not see where the money was to be obtained. Even E. J. Murphy, who with excessive severity declared the agreement "one of the rottenest ever offered to the miners," did not counsel a strike so much as an agreement with independent companies.

On July 15 the convention refused to vote for or against the agreement submitted—a somewhat weak stand to take. There was a clash between two delegates in which one Coburn received a scalp wound which bled profusely. Finally the miners decided to return home and consult with their constituents over Sunday. When they came back they were prepared not only to remain at work, but to accept the contract already signed by their officials.

Oklahoma Operators Back Down

At the meeting of the Southwestern Coal Operators' Association held in Kansas City on July 14, it developed that the Kansas and Missouri operators had decided among themselves to pay the full increases embodied in the New York agreement, their reason for so doing being that President Megeath, of the Sheridan Coal Co., had made a positive statement to the effect that he would under no consideration shut his mines down as he had contracts that required constant operation.

It is doubtful whether Megeath took this position in the positive manner stated, but the miners undoubtedly have been well informed of the readiness of some coal operators to grant the increases called for in the McAlpin agreement, and for that reason they stood as a unit for those same advances in the Southwest.

Receiver Deserts the Oklahoma Operators

The Oklahoma operators have always been inclined to separate themselves from the Southwestern Coal Operators' Association in order that they might contend for an independent settlement of wage questions. On Friday, July 14, it became known that Receiver Duncan, of the Osage Coal Mining Co., at McAlester, had stated that the Court had instructed him not to permit his mines to strike or suspend operations. Consequently the Oklahoma operators decided that the best settlement possible with the miners under the New York agreement should be made, and the various scale committees were instructed accordingly.

It is now definitely felt that no suspension will occur on Aug. 1, and the railroads have all discontinued storing coal in the Southwest. If the Oklahoma and Arkansas miners do not finally receive the full increases made in the East, doubtless a compromise will be reached. The thoroughly disorganized condition of the operators, particularly those in the Kansas field who have been suffering from the effects of lawsuits and the dominating attitude of the labor leaders, is responsible for this state of affairs so deeply regretted by the Oklahoma operators, but which cannot be remedied except perhaps at the risk of a lengthy strike.

Oklahoma Operators Relinquish Wage Struggle

The attitude of Messrs. Megeath and Duncan was only disclosed at the last moment, and since they represent strong interests having a comparatively large production, their declination to stand with the other operators broke down the spirit of opposition on the part of Oklahoma and Arkansas.

The Oklahoma operators undoubtedly will form an independent organization of their own to deal with labor matters in the future—just as soon as the agreement now to be made is completed. Most of them are bitter toward the Kansas and Missouri operators who, they claim, dominate the association's actions to their detriment. Thus is seen another example of the inability of coal operators to unitedly or successfully withstand the unreasonable demands of labor leaders.

The general scale committee met at Kansas City on the morning of July 15 and received from the subcommittee a report that they had disagreed. The operators of the Southwestern Association then presented the miners a proposition based on the McAlpin agreement and asked for an adjournment until 10 a.m. Monday, July 17. The miners objected to this adjournment, stating they were ready to decline the operators' proposition and adjourn sine die. However, they finally agreed to refer the matter to a scale committee which then met.

Their first objection to the operators' proposition was to the uniform advance of 3c. on all mine-run coal. According to the miners, no contract will be signed that does not give the longwall mines in the Southwest an advance of 5c. per ton. The operators' subcommittee has already conceded this point to avoid a break in the negotiations.

The real fight will come on the Howat refusal to accept clause 6 of the New York agreement which provides that, except by mutual consent, no change in rules and mining conditions will be made such as will either decrease the earning power of the miners or increase the cost of production.

Howat, Frampton and Waters, the local district leaders, are in control of the miners' delegates and they believe that the operators are weak and unable to stand together in the fight. About the only thing that will prevent the mine workers from writing into the contract such clauses as they desire, is the pressure from the international organization which will eventually compel them to be bound by clause 6 of the New York agreement.

If the representatives of the operators concede a 5c. per ton advance on longwall coal the other propositions will probably be discussed by the subcommittee for about a week, when a disagreement will be reported. The international organization will then take a hand in the game and possibly refer the matter to a referendum vote of the miners.

The miners of Missouri, Arkansas and Oklahoma would in that contingency probably vote to accept clause 6 and other parts of the New York agreement, while the Kansas miners would vote to reject it unless, meantime, Howat had been whipped into line by the international organization. Until the vote is taken the mines will probably continue in operation.

Editorials

Sad Plight of the Retailers

The anthracite retailers of Pennsylvania object to the inquiry now being made into their affairs. It has been well known that for years they have been aspersing the anthracite operator and urging an inquiry into his way of doing business. The retailer now will get his turn. He may not be making too much money. We trust he is only taking out a fair amount of profit and not interposing too many toll takers between operator and public. But if he is not doing wrong, then the inquiry will not hurt him. At least that is what he always asserted about the operator—why should not the same reasoning apply to him?

The public has just as much right to ascertain the retailer's profits and manner of doing business as to make inquiry into those of the operator. What he did with the tax rebate is a legitimate matter for public inquiry, if similar inquiries in reference to the operator are to be held valid.

The public little realizes yet how largely the cost of commodities depends on the exactions or the cost of service of the retailer. Hitherto it would seem that the retail coal man has not reaped an excessive reward, but nevertheless he should be willing to be investigated, for if he has wronged the public he should pay and if he has not then he should, and we hope he will, escape condemnation. But no matter which befalls him, to be investigated is his natural lot, so why make so loud an outcry?

Class Legislation

The proposed plan of Congress to tax copper is a case of class legislation of the rankest order. Just why copper should be singled out by the Washington politicians and made a special target, while other metals and widely used commodities are ignored, is not plain to the lay mind. Perhaps the present high market price of copper has caused Congressional attention to be directed to this metal, but a hundred other commodities are selling at record prices, with perhaps less prospect than copper of soon returning to normal market conditions.

The hazards of mining are great, and in proportion to the chances taken, the returns to the average investor over a period of years is certainly not excessive. If the price of potatoes is doubled by a crop failure in a certain section, or by any other circumstances, calamitous or otherwise, does Congress immediately impose a special tax on the farmers who are fortunate enough to have potatoes to sell? Would it be fair if Congress did do such a thing? If not, then why this tax on copper? Why not oil, iron, paper, wool or lumber?

This Government, because of unusual world conditions, is facing problems that have never before arisen. Increased Federal revenue must be forthcoming, and such money must necessarily come from increased taxation. But let the burden fall fairly and justly on the shoulders of all rather than on a few. Unless taxes in the future are to be placed indiscriminately on a few who can pay rather than on all who should pay, the proposed levy on copper is unjust.

Plans to Resize Anthracite End in a Fiasco

After many months' discussion, shipments of the new anthracite sizes were actually made a few weeks ago, but the operators are once more back to the old screens. Instead of the larger operators initiating this move, as is usual, it was started by the individual operators, supposedly through the recently organized association of smaller shippers. It develops that the program has been entirely upset by a breach of faith on the part of the mine owners.

The information given in *Coal Age,* June 24, was from a most trustworthy source, and the new-sized coal was actually seen in dealers' yards, but as a result of the present fiasco there is considerable dissension, not to mention actual disgust, among the individual operators. The latest information is to the effect that the experiment will be resumed on a larger scale next fall. If it is actually decided then to be to the best interests of the trade to readjust the sizes, it is to be hoped that a method of acquainting the trade and consumers of coal with the necessity of the change will be worked out in a way to inspire a measure of confidence in the coal-consuming public, who surely have some interest in the subject and whose good-will is worth while cultivating.

Mine and Other Penologies

Two of the main ideas of the penologists are that punishment shall not be degrading and that the punished man shall, after expiating his offense, be free to exercise his liberty and practice his vocation without his neighbor's being aware of his past record. To this end it has been enacted into law that no man shall mention the previous penitentiary record of a one-time prisoner.

This seems a fair statement also of what the Russell Sage Foundation believes is the correct manner to handle criminals. But it does not accept these doctrines without reservation. Speaking under the head of "Protective Legislation and its Enforcement" in its reports on "Industrial Conditions in Springfield, Ill.," it says:

> **Of the work performed by the mining inspectors no reports are issued. The annual coal reports of the State Mining Board, though they run over 275 pages and give detailed statistics regarding coal output, number of employees, days of operation, cost of mining, number of accidents, kegs of powder used for blasting, etc., contain no data regarding the number of violations found, orders issued or prosecutions brought. If there is one thing above all others which these reports should tell it is the nature and results of the work of the state and county mining inspectors in their most important function—the safeguarding of life in the dangerous occupation of mining. The public every year pays thousands of dollars for the service of these officers and should have some means of knowing with what faithfulness they are performing their duties**

Judging from local accidents, the data contained in state reports and the hazardous character of these occupations generally, accident-prevention work in Springfield and the state needs especially to be centered upon railroads and coal mining. It seems particularly unfortunate, therefore, that the work of the railway safety inspectors and mining inspectors is not better organized, more carefully checked up and reported on from time to time.

The purpose is to keep the black record of any mine owner or workingman before the public, which is the very thing that in the case of an active malefactor the Foundation would condemn. The punishment of such a man, they would declare, should terminate at or within the period nominated by the judge. Why not save the reputation also of a passive malefactor, such as an operator who omits to erect some safety device or some workman who fails to use some particular kind of stemming?

There appears to be a disposition to exalt into crimes little defects of prevision and to make a light matter of the larger evils such as murder and theft. In the home of the Foundation, New York, if a man steals the lid off a garbage can, no one seeks him to have him arrested, no one blames the police for failing to find the thief, but they arrest the owner of the can on what often amounts merely to a charge of having been robbed of his garbage-can cover.

No longer would Cain excuse himself of murder. A confession would relieve him of all culpability. But the charge that he did not prevent Abel from being killed would be one which would drive him forth into the land of Nod and mark him with a brand. For the thing undone which leads to an unfortunate result that may be wholly distant and uncertain is often regarded as meriting a punishment more unrelenting if not as severe as the thing deliberately done.

There is growing a penal class legislation which takes the view that men of character should be held strictly accountable and kept in the straight and narrow path by merciless regulation, while the bad man is only to be coaxed into a better way, for, it is argued, rough treatment will only harden him.

Perhaps it is practical penology to blacken the better people and whitewash the criminals. Maybe it will achieve the work of reform with the maximum efficiency. But even if a practical, it is a hard doctrine and one that makes the part of the responsible man somewhat burdensome to maintain.

However, it is probable that the records of sentences for violation of the mining law of Illinois are few not so much because of consideration for the offender as because such sentences themselves are infrequent. Convictions take up many days of precious time, witnesses are hard to secure, threats of dismissal with every prospect of success are quite freely made by workingmen with a union and a vote, and inspectors generally are prone not to drive to desperation those who are guilty for fear they may be men of that class who penologists tell us are only hardened and degraded and not rendered tractable or uplifted by a justice which is stone-blind.

Perhaps the public will yet declare that penal correction shall be given like medicine altogether according to the possibilities of improvement rather than in proportion to the individual's defect from the needed normality. Then the only equality which justice will seek will be to bear a hand of equal severity on both saint and sinner regardless of their relative penal deserving.

The Mine Caves in Scranton

There have been several suggestions made for ending the unfortunate caves at Scranton, Penn. Some of them are amusing in their naiveté. One staid Philadelphia paper suggests by its pictures and captions that the right way to support the roof is with iron girders, forgetting that these girders would last for only a few years unless kept painted, and would in any case need renewing before long. No temporary solution can fill Scranton's needs; certainly not one which is so expensive as this.

Other people have advanced the proposition that coal should be replaced by concrete, which is also such an expensive plan that it could not be considered. Some even advocate concrete timbers, forgetting that they would be apt to topple over at any time and let the roof down. But even if concrete were the best material to replace pillars, it would be undesirable, for only a continuous support that will maintain alike what is now undermined and what will be undermined would be satisfactory. In fact, without any further mining, disaster would be bound to overwhelm Hyde Park in West Scranton.

The United States Bureau of Mines appears, in the person of Donald F. MacDonald, to be favoring the removal of the coal and the erection of only temporary wooden buildings over the area affected, these properties being protected by insurance. But this point of view overlooks the danger of fires and explosions of gas and the risk that men, women and children might drop in the caves and thus be injured and killed, though, of course, by avoiding brick and concrete structures the danger of crushing the occupants of the houses is avoided.

It does not seem that the bureau, by giving up the hydraulic filling proposition, has strengthened its position, and its present attitude is one of over-much respect of property. It is true the regard is for the poor man's rights as much as for that of the rich man, but both rich and poor can be too greedy in seeking their capital ahead of their safety.

Filling is the real solution by all recognized authorities. The only questions are, who shall pay for it, how shall it be done and where shall the material be obtained.

The Lehigh Valley Coal Co. is publishing a safety number of its *Employees' Magazine* which will be double even its usual size. Its enterprise is the more creditable that the publication appears in the face of a large increase in the cost of paper, for the price of paper has practically doubled since the war. The booklet, which has no revenue-producing features of any kind, is a large charge to the company. It is distributed free to its 20,000 employees and to numerous persons not so closely related to the company, and the expenses of the enterprise must be extremely heavy. We wish the editor all the success in promoting safety and mutual understanding which such princely generosity and philanthropy deserve.

President Wilson said at the opening of the office building of the American Federation of Labor at Washington, D. C.: "I am sorry there were any judges in the United States who had to be told that labor was not a commodity but a part of a man's life." If labor is not a commodity, then what right has the laborer to sell it. Surely the judges were right and the president wrong.

Discussion by Readers

Wash Houses at Illinois Mines

Letter No. 1—Kindly permit me to refer to the news item, *Coal Age,* July 1, p. 48, which stated that action had been begun in the court at Carlinville, Ill., against the Superior Coal Co. for alleged violation of the Illinois mining law requiring wash houses at the mines. The high value that the officials of the Superior Coal Co. place on the opinion of readers of *Coal Age* prompts me to offer the following explanation and correction of the statements in that item, in order that the true situation may be rightly appreciated.

One would infer from the reading of the news item that the Superior Coal Co. had either neglected or refused to build a wash house for their employees, as required by law; whereas, in fact, ours was one of the first companies in the state to comply with this requirement of the law and at the present has and maintains three large fireproof buildings constructed of concrete and steel, one at each of its three properties.

The question of whether this requirement of the law is constitutional, unconstitutional or oppressive has not been raised, and the Superior Coal Co. has not at any time refused to comply with any orders of either the state or county mine inspectors. Before equipping the wash houses mentioned, which are among the best in the state, General Superintendent John D. Reese made a thorough investigation of wash houses in different parts of the country. He found that hangers furnished a much more satisfactory means of handling the clothes of the men than was possible in the use of lockers, and as a result, hangers were adopted and installed in each of these buildings, it being thought that they would give better satisfaction and meet with the approval of all concerned.

The present lawsuit grew out of the dissatisfaction of the miners regarding the space between the hangers. The company proposed to space the hangers 24 in. apart. The representatives of the Miners' Union, however, refused to accept this arrangement and demanded that each man be provided with two hangers spaced 24 in. center to center. The state mine inspector, failing to bring about an agreement in respect to what would be suitable and satisfactory to both parties, instructed the company to install the lockers required by law.

In compliance with these instructions the company at once ordered the lockers, but this order was held up at the request of the miners, who seemed anxious to force their demands on the company. As the result of this unfortunate contention, it may be stated that at the present time the company has placed a rush order for the installation of the lockers, feeling that it was necessary to carry out the orders of the mine inspector, although everyone concerned insists that hangers are much more satisfactory than lockers for the proper airing and drying of miners' clothes between shifts.

Permit me to state, further, that the company's wash houses are equipped with shower baths, and in order to insure sanitary conditions throughout, an attendant is furnished by the company, at each mine. This attendant devotes his entire time to keeping the building clean and in proper order. It is not too much to say that our officials are one and all proud of these buildings and their equipment, with the possible exception of the enforced installation of lockers instead of hangers for handling the garments. Operators of other large companies in the state have visited the buildings and adopted the same plan for the construction of their own wash houses.

D. D. WILCOX,
Gillespie, Ill. Asst. Supt., Superior Coal Co.

Accounting of Machine Coal

Letter No. 3—Replying to the inquiry in regard to the accounting of machine coal, *Coal Age,* June 17, p. 1067, we note that readers are invited to discuss this question and give what, in their opinion, is the simplest method of crediting the coal cut by each machine runner and loaded by different miners.

The difficulty that arises when miners are transferred from one section to another section where the coal is cut by another machine is overcome very simply by supplying each machine runner with checks containing a letter or a number indicating his machine. Each machine runner then gives one of his checks to each man starting to load coal in his section. The miner must hang these checks given him by the machine runner, together with his own check, on his first car loaded. As each car arrives at the tipple, the weighmaster takes the two checks from the car and credits the coal in the column under the miner's check number, at the same time penciling the machine runner's check number or letter above the same column.

At the end of each day's run, the weighmaster credits the footing of the miner's coal in the corresponding machine runner's column. He continues to do this each day until the miner is transferred to a section where the coal is cut by another machine. When that occurs, the miner hangs the checks given him by the new machine runner, together with his own check, on his first car loaded in that section. This informs the weighmaster and check weighman that the miner is loading coal cut by another machine, and this change is indicated at once on the bulletin or weighsheet by writing the new runner's check number or letter above that miner's column. This system is working with entire satisfaction in our mines.

Williamsburg, Ky. BON JELLICO COAL CO.

Letter No. 4—Referring to the inquiry of Consulting Engineer, *Coal Age,* June 17, p. 1067, I want to say that a simple method of marking the weighsheet, in order to avoid confusion, is to give each machine runner a certain number, as Nos. 1, 2, 3, etc., say up to 10, then starting the miner's checks in order, 11, 12, 13, etc.

Assuming that each machine cuts the coal for 20 loaders, the weighboss marks on the weighsheet "Machine No. 1" above the first 20 numbers for miners' coal. For example, the first 20 columns of the weighsheet are marked with the miners' check numbers, say 11 to 30 inclusive, and above them "Machine No. 1." Above the next 20 miners' columns, numbered 31 to 50, is marked "Machine No. 2."

I would suggest that each miner retain the same check number from one pay to another, regardless of whether he changes from one machine to another during that time. In case a miner is transferred to another machine before the next pay, the weighboss indicates the transfer on the weighsheet by marking the new machine number with a circle around it at the bottom of the miner's column. The bookkeeper will then credit that coal to the new machine number instead of giving credit to the machine marked above the columns. When the next pay comes, this miner is given a new check number and his coal is entered on the weighsheet in its proper place, under the correct machine number.

When a miner starts loading coal for a machine, or is transferred to a new machine, it is necessary for him to hang a paper check on the car, together with his own check number, the paper check being marked with the number of the machine cutting his coal. This system, I believe, will avoid any confusion and require no material change in the bookkeeping, in order to keep a correct account of the coal cut by each machine and loaded by each miner.

ALEX PETTIGREW,
Mine Manager, Danville Collieries Coal Co.
Catlin, Ill.

Merit vs. Favoritism in Gaining Promotion in Mining

Letter No. 1—A Canadian reader would like to shake hands with "Pennsylvania Reader," *Coal Age,* June 3, p. 954, on the subject of "Promotion Based on Merit." Having had one or two experiences of the sort he describes, and in the hope that my haps and mishaps may prove a timely warning to another, I will recite briefly what occurred on two occasions when I was made the innocent scapegoat and had to suffer for the ill-doing and lack of ability of others who held their positions by virtue of their association in the company.

THE LURE OF A HIGH OFFICIAL POSITION

The first instance occurred when I was young and ambitious to make a place for myself. I was lured to accept a position as "general superintendent" of a South American company that had recently started. The title of the office loomed up well in my imagination, and the proposition was spread before me in glowing colors. Everything was said to be in first-class order, the financial standing of the company good and the necessary equipment on the ground ready for installation. Arriving at my destination, however, I was surprised but not disheartened when informed that the machinery was at a port some 300 mi. away, where it was held for storage charges. Nevertheless, I accepted the situation with energy, believing it was an opportunity to cover myself with glory by placing the undertaking on a sound working basis.

In response to my report to the company, which was promptly made and gave an accurate summary of the conditions as I had found them and asked for a sufficient amount to put the mine in working condition, I received by return mail a severe censure for writing such a report, which it was explained "might get into the hands of stockholders and damage the credit of the company." The letter further stated that "the last report showed the mine to be well equipped." I was nettled and cabled back, "Come and see for yourself."

But my real troubles began when, the following month, a young doctor just out of college, a relation of one of the directors of the company, arrived on the ground with the nominal title of "Resident Doctor," which sounded good back home. His position would be better described as "Resident Director," as the sequel proved. About the same time came the appointment to a similar unnecessary position, of a Spanish merchant of the place, who promptly put his son on my staff to act as accountant. Thus I not only had a board of directors at my elbow, but was burdened with two high-salaried men whose services I did not require. I was blamed for everything that went wrong, and these two superfluous officials took to themselves the credit for what was accomplished. I was glad at the end of the year to resign my position as general superintendent and come North. My information is that the company is still continuing its practice of selling treasury shares on the strength of the false reports made of working conditions.

BEGINNING AT THE BOTTOM WITH BRIGHT HOPES OF FUTURE ADVANCEMENT

Previous experience led me to choose for my second adventure the comparatively low position of mining engineer for a large corporation. I determined to begin low and stick, believing that hard work and some ability would bring promotion in time. I was a stranger in the district, but was received with open arms and assigned to duty in a department bossed, as I soon learned, by a brother-in-law of the vice-president of the company. In the same department, also, was a cousin of the general manager. The situation was not promising, and I determined that my only salvation was to cater to the said brother-in-law, which by nature I did not always do gracefully. I was inclined to feel that credit should be given where credit was due and too often was jealous when I observed that the report of the department appropriated to itself my language and suggestions without the credit I so longed to receive. This situation terminated, however, not as I had feared, with a falling out with the boss, but by reason of a reduction of the working force, which occurred as the result of a local depression of business when I with eight others was dismissed.

In common with other men I am desirous of cultivating the faculty of making one's way in the world. The experiences just related tended to produce a lack of personal confidence, and I have often asked myself, Am I interpreting correctly the ways of the business world? Does success always mean promotion, and does promotion depend on one's knowledge and ability more than on his "pull" in the company? How can a man recover when he feels, rightly or wrongly, that he has been the victim of circumstances over which he had no control? In truth, have I been the victim of circumstances, or have I overestimated my ability to accomplish desired results and am therefore rightly blamed? Has it been my disposition to magnify little troubles or to make a mountain out of a molehill?

The answers to these questions I feel sure are important to many men whose untoward experiences have induced a lack of self-confidence. I like the tone of "Pennsylvania Reader's" letter and would gladly shake hands with him. Naturally, men brood over their wrongs. It is not human nature to admit defeat or acknowledge inability or inferiority, and for this reason we fear the unprejudiced judgment of others that may condemn ourselves instead of the circumstances.

Success Taught Through Other Men's Failures

Nothing, I think, interests me more than the reading of the lives of successful men, because in each story I have hoped to find the key to their success, but too often I discover instead that peculiar circumstances, or an exceptional opportunity, or an extraordinary pull, was the real secret of the man's success. How much more would be taught if these accounts described the failures of successful men when making their start and how they avoided untoward circumstances such as marked the lives of Benjamin Franklin, Abraham Lincoln and others. More is to be learned from the failures of men than from their successes. We hear of men who can turn failure into success. It is disappointing to conclude that this is only done by bluff when one has aspired to rise by virtue of his own knowledge and work. It is poor consolation to know that the man who rises to a high position by bluff will not last long, since the fact remains that he succeeded in gaining the position sought. The subject presents many anomalies. Canadian Reader.

Sydney, N. S., Canada.

Letter No. 2—The foreword entitled "Playing Favorites," *Coal Age,* June 3, calls to mind an instance in which almost everyone will agree a great injustice was done to an old and trusted employee. It happened in this wise:

A foreigner by birth held the position of timekeeper and office clerk for one of the smaller coal companies a number of years. His work had reached such a state of efficiency that it was often remarked by other coal operators, who frequently intimated that a larger company would consider his services invaluable. The man himself, however, always stated that his company needed him and was determined to remain in his place.

The system used by this timekeeper in keeping his accounts was such that the superintendent could tell at a glance what had been the company's profits or losses and what were the available assets and liabilities at any time of the year, as compared with other years. He not only kept a complete tabulation of the number of tons of coal mined, but showed where it was mined.

The efficiency of the system by which these accounts were kept was clearly shown on one occasion when a lawsuit of the company was decided in their favor, owing to the ability of the company to show by reference to its books where every pound of coal was mined. This lawsuit, representing, as it did, a large amount of money involved, should have made the company appreciate more fully the careful manner in which the accounts had been kept by their timekeeper and office clerk.

Later, it so happened that a new superintendent came into office and, by his seeming economy, completely won the heart of his employer. When asked, however, to explain a certain violation of orders, he did so by throwing the blame on the timekeeper and hid his wrongdoing under a mock sincerity. As a result of this difficulty, notwithstanding the timekeeper's long and efficient service, he received a curt note telling him that his services were no longer required and offering no explanation. To this day the man does not know the reason for his dismissal. As this took place just at the time of a financial depression and because of his advanced age, the accountant was unable to obtain work elsewhere for several months.

This incident tempts one to wonder if true efficiency really pays in personal affairs and if not, we may ask, Where does the fault lie? Let me suggest that the wisest plan for any mine official to adopt is to never discharge a man without making a full and careful investigation of his case, and at least telling him why his services are no longer required, so that he will have an opportunity to square himself in the eyes of his employer. I know one superintendent who has always adopted the policy of giving every man "three chances" before finally discharging him. He claims that by that time he will know with certainty whether the man is unworthy or whether someone else has a favorite whom he desires for the place.

Ensley, Ala. Observer.

Use of Belt Dressing

Letter No. 2—Referring to the views expressed by F. B. Prescott, as taken from the *Anode* and given place in *Coal Age,* June 3, p. 966, I beg to say that my own experience differs materially from that of Mr. Prescott where he states that "the use of belt dressing should be abolished, because it is unsafe, unnecessary and wasteful." Permit me to discuss briefly each of these three points in reference to the use of a proper belt dressing.

First, as to safety. I fail to know of a single case where anyone has been hurt who exercised reasonable care when applying a dressing to a belt. If the dressing is applied while the belt is in motion, this should always be done at the point where it leaves the pulley and never where it is approaching the same. In that case, also, the dressing should be applied at the end of a stick and never by the hand, which should be kept well outside of the line of the belt.

A better plan is to apply the dressing when the belt is at rest, as there is then absolutely no danger. Because this method is somewhat slower and requires more labor, it is common to find men using a stick for applying the dressing. Allow me to repeat that dressing can always be applied to a belt in a safe manner with the exercise of proper care, and there is no reason why one should not always be careful in whatever he undertakes. In my opinion, also, a dressed belt is safer than one that is undressed, because the dressing tends to prevent any slip and there is less danger of a belt running off the pulley. Neither is it so liable to become brittle and break, or to pull the shaft down on the heads of men working beneath.

Second, as to the use of a dressing being unnecessary. I know a certain philosopher who claims that "nothing is absolutely necessary." His logic is correct, but see where it leads. You say, "Why, yes, food is necessary." He replies, "Why is food necessary?" You answer, of course, "It is necessary in order to live." The philosopher rejoins, "But is it absolutely necessary that you

live?" You hem and haw, but the philosopher has won the argument.

Now, applying this little homily to the question of whether the application of a belt dressing is necessary from the viewpoint of a practical man, I claim that a proper belt treatment is a belt food. It is as necessary to the life of the belt as food is to animal life. A good dressing lengthens the life of a belt by penetrating its pores and lubricating its fibers, thus keeping the hide in the same pliable condition that it possessed on the back of a steer. My grandfather always oiled his boots and kept them in fine condition, and as a result the tops lasted not a few months, as is common today, but for years.

Third, as to belt dressing being wasteful. R. C. Carpenter, professor of experimental engineering at Cornell University, has shown that treated belts will pull greater loads without slipping than similar belts that have not been treated. If this is true, it is clear that money will be saved by buying a belt that can be treated, as one of less width will then be required for the same service. An untreated belt of the same size will slip under the same load, and each per cent. of slip means a certain increased percentage in fuel supply.

For example, if the yearly fuel bill of a certain plant is $10,000, and there is 3 per cent. of slip in the main belt, it is easy to estimate that this may mean an extra cost of $300 a year for fuel and perhaps more. If there is the same slip in the numerous belts transmitting the power beyond the main belt, each of these defective transmissions increases the fuel bill an additional amount. When we consider that a dollar's worth of belt dressing may save $300 in fuel, it is hard to understand why its use is wasteful.

A proper belt dressing never makes a belt "sticky," but renders it pliable so that it comes into more intimate contact with the pulley. Again, the use of dressing permits a belt to be run slack, where a dry untreated belt will require a greater tension for the transmission of the same power. A tight belt increases the bearing friction. I know of cases where treated belts running on short centers are so slack that the sides almost touch each other, while the tension on the tight side is close to the breaking point of the belt. I want to say that that is good belt practice; it is good economy. My conclusion is, therefore, that there is no economic waste in the use of a good belt dressing. If that were true, the use of all lubricants would be an economic waste.

N. G. NEAR.

New York City.

Siphon Line in a Mine

Letter No. 2—The interesting letter of S. K., *Coal Age*, June 24, p. 1101, gives many ideas that are of practical value in the laying of a pipe line for this purpose in a mine.

Mine siphons are becoming more and more popular as a means of drainage, and operators are beginning to appreciate their value and to use them wherever the conditions are favorable. However, in too many instances it is assumed that all that is required is to lay the pipe and the water will flow, provided the upper basin or sump has an elevation above the shaft bottom. When a siphon is laid under these conditions and fails to work the foreman concludes that the scheme is not practical when in reality the failure is due to his own want of understanding the principles on which the operation of a siphon depends.

In my experience I have seen many siphons, some of which worked successfully and others failed completely. At times the trouble was due to leaky joints in the pipe line, and at other times proper attention had not been given to providing a size of pipe that would properly regulate and control the flow of water from the upper basin to the summit of the pipe line and from that point to where the water was discharged in the lower basin. This has been fully explained in the answer given to the inquiry, May 13, p. 858. Too often the pipes are laid in a great hurry. Men frequently try to get the job off their hands as quickly as possible, only to find when the siphon refuses to work that the job is more than ever on their hands, which proves the truth of the old saying, "A thing that is worth doing at all is worth doing well."

In this connection I want to explain briefly the arrangement where a siphon line was made to do excellent service in the drainage of a mine opened on a hillside at a point about 600 ft. above the river. The mine was opened by driving three main entries abreast of one another. Two pairs of cross-entries were then driven to the left and right of these main entries.

Laying a Three-Branch Siphon in a Mine

Starting from the mouth of the mine, a pipe line was laid and extended about 50 ft. down the mountain. From the same point at the mouth of the mine, the pipe line was laid in the middle one of the three main entries as far as the first left and first right entries. From this point the pipe branched three ways, one branch being extended 300 ft. down the straight entry, while another was extended 600 ft. to a swag in the first cross-entry on the left, where a sump was provided into which all the water from the rooms driven to the rise could drain, while the water that accumulated in the rooms driven to the dip was bailed into cars and taken to this sump. A third branch was extended on a level 200 ft. into the first right entry, before it started to dip. The entry then dipped gradually for a distance of about 400 ft. to a point where a sump was made for the collection of the water.

This siphon differed in no way from any ordinary siphon, except that at a point near the mouth of the mine it crossed a tank line that furnished water to the camp below. Advantage was taken of this fact to connect the tank line with the siphon line. A good valve was placed in this connection, which made it easy to prime the siphon line whenever that was necessary. Valves were also placed in the siphon line at the intake end of each branch and at the point where the three branches divided, so as to permit the siphon to draw from any one of the three sumps separately, as desired. A valve was also placed at the discharge end of the siphon line, and at this end the pipe was submerged in a barrel of water so as to prevent the admission of air to the pipe at that point.

The diameter of the pipe was 3 in. throughout the entire system. A small air vent was provided at the summit of the pipe line close to the connection with the tank line so as to allow the escape of air from the pipe line when being primed. In order to prime the system, all the end valves were closed and the air vent and the valve in the tank connection opened to permit water to fill the siphon. After priming, the valves at the point where the branches divide were all closed except the one in the

branch from which it was desired to draw the water. This valve was left open and the end valve of that branch was then opened and last of all the discharge valve at the outside end of the pipe line was opened, when the water at once started to flow and continued to do so until all the water was drained from that sump. In the same manner the water from each of the remaining sumps was drained in turn by opening and closing the proper valves.

This siphon takes care of all the water in this mine and has given the best of satisfaction. The company is highly in favor of siphons wherever they can be used in the mine. All the pipe joints are protected with common coal tar to render them air-tight. The pipes are laid on the floor of the entries and covered over with a light covering of dirt that enables them to be reached readily in case of any repairs that may be needed in the line.

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As no doubt most *Coal Age* readers are well aware, mine ventilators were originally invariably constructed without any cover or casing surrounding the wheel. This feature, which has been universally adopted in all modern centrifugal fans, is termed the "housing." Its use produced such improved results, that fan housing has become standard practice today. The theory of the effect of the spiral casing upon the yield of a centrifugal fan has been well explained by M. Daniel Murgue, in his book entitled "Theories and Practice of Centrifugal Ventilating Machines." This was translated into English by A. L. Steavenson and was published in Durham, England, in 1883. On page 9 of the English edition, we find the following statement:

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What M. Murgue stated over 30 years ago still holds good. In the operation of an open-running wheel, air is discharged into the atmosphere, at a high velocity, which represents a considerable loss in velocity head, whereas, when a spiral housing surrounds the wheel, terminating in an expanding chimney that provides for the air being discharged at a lower velocity, much of this energy is saved and becomes effective in the mine or airway. As a result, a larger volume of air is circulated with the same power, the fan making the same revolutions per minute.

The efficiency of an open-running fan is quite low, owing to the high velocity of the air discharged into the atmosphere. This lost energy is absorbed in the air surrounding the fan, which is stirred up by the air discharged. With equal reason, one might expect the impeller of a centrifugal pump to handle the same volume of water when submerged and stripped of its spiral casing, as to expect a centrifugal fan to operate with equal efficiency without its housing.

The experiments of the American Blower Co. have made clear the advantages of the spiral casing in the operation of all fans of the centrifugal type. These experiments were found necessary, as open-running fans are used in the navies of many countries, for creating boiler draft, for torpedo boats and destroyers where it is essential to eliminate weight, as far as possible, even at the expense of efficiency.

The difference in the results obtained by these two types of fan is in full accordance with Bernouilli's theory relating to the movement of fluids. This theory makes the sum of the velocity head, pressure head and gravity head, in any established flow, a constant. In respect to air, the gravity head is so slight, that it can be ignored and the sum of the velocity head and pressure head is then constant. Hence, any increase in velocity head means a corresponding decrease in pressure head, for the same power producing circulation. THOMAS CHESTER,

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Detroit, Mich.

Detecting Gas by Smell

Letter No. 14—Having followed the discussion in *Coal Age* regarding the smell of marsh gas in mines, I would like to give my own experience and belief.

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Therefore, if a fireboss detects firedamp in a mine by the flame cap formed on his lamp and at the same time observes that the gas has a certain smell or odor he cannot assume that such firedamp mixture contains only marsh gas. It is quite possible that other explosive gases may be present. Indeed, hydrogen sulphide (H_2S) is explosive when mixed with air in certain proportions, and this gas has an offensive smell.

In his Letter No. 1, *Coal Age*, May 27, p. 938, Jacob Riley speaks of the dayboss informing him of gas being in a place by remarking, "It stinks." I may say that I worked for a time in the same mine (Westleigh, Lancashire, England) to which Mr. Riley has referred, and although it was not my duty at that time to test for gas, I frequently smelled the firedamp at the end of the brushing on the roads, close to the longwall face.

Since this discussion started, I have many times raised my head into a body of firedamp to ascertain if the gas had any smell. I have been unable, however, to detect, on such occasions, any difference in that respect from what would be experienced in a pure ventilating current, except a slight stuffiness of the air where the gas was accumulated and which, after a while, seemed to affect the nostrils. There is no doubt in my mind but that firedamp mixtures have an odor, but I am inclined to believe that it is due to the presence of other gases than methane (CH_4), which all authorities agree has no odor.

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In making some recent investigations in regard to the mining of anthracite, the following questions have arisen, and I shall much appreciate what information you can give me in answer to them:

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Assuming that these questions refer to the mining of anthracite in Pennsylvania, we reply as follows: 1. There have been no anthracite coal lands offered on the market or sold within recent years. These lands, with a few isolated exceptions, were taken up long ago by large coal corporations and private interests. Much of the coal has now been worked out from under the lands, and many of the mines have been abandoned. A number of other mines are working on pillar coal or developing thinner seams that had not been previously worked. A smaller number of anthracite mines are still developing virgin coal.

2. There are a large number of anthracite beds, varying from a few inches to 60 ft. in thickness, the latter thickness being attained by what is known as the "Mammoth" bed, in the western-middle anthracite field. The anthracite formations of Pennsylvania are divided as follows: Northern field, eastern-middle field, western-middle field, southern field. The Mammoth bed is found in each of these areas, but in many localities is divided into a number of splits separated by partings of varying thickness. This is particularly true in the southern field, where the Mammoth bed attains a total thickness of 125 ft., including the several splits and partings. The more workable anthracite seams, however, vary from 4 to 10 or 12 ft. in thickness.

3. In common with other sedimentary formations, the anthracite beds were originally horizontal, but the geological changes and disturbances that have produced anthracitism have inclined these beds at all angles from horizontal to vertical. In many places the beds are much faulted, and the foldings of the strata in some sections have reversed the order of superposition of the beds. In a few restricted areas only are the anthracite beds level.

4. According to the statement of the anthracite operators, which was widely published as an advertisement in the newspapers of Feb. 14, 1916, under the title, "Cost of a Ton of Anthracite Coal from Mine to Cellar," the total cost of production of anthracite, in 1914, including loss in handling and the earnings of the company, was 48.96 per cent.; cost of transportation from mine to market, 21.38 per cent.; and the retailing cost, 29.66 per cent. of the retail price paid for the coal in the New York market. The cost of production is further divided into the following: Labor, 24.83 per cent.; materials of all kinds used in preparing the coal for market, royalty, taxes, depreciation, management and like overhead charges, 8.28 per cent.; loss in handling small sizes, 13.1 per cent.; and the earnings or profits of the operating companies, 2.75 per cent.

For example, taking the retail price of anthracite on the New York market as $7.25 per ton, the total cost of production of Pennsylvania anthracite in 1914, as outlined, was $0.4896 \times 7.25 = \$3.55$ per ton, which is made up of the following items: Labor, $0.2483 \times 7.25 = \$1.80$; supplies, management, etc., $0.0828 \times 7.25 = \$0.60$; loss in handling small sizes, $0.131 \times 7.25 = \$0.95$; and profits earned, $0.0275 \times 7.25 = \$0.20$. Likewise, the cost of transportation from mine to market, for the same period, was $0.2138 \times 7.25 = \$1.55$, and the cost of retailing, $0.2966 \times 7.25 = \$2.15$ per ton of coal mined.

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Examination Questions

British Columbia Examination, First Class, May 30, 1916

(Selected Questions)

Ques.—Define the terms: (a) Chemical compound; (b) mechanical mixture; (c) atomic volume.

Ans.—(a) The molecules of a chemical compound are formed by the chemical union of two or more unlike atoms. In such a compound the elements are combined in fixed proportions that are always the same for the same compound or substance.

(b) In a mechanical mixture the ingredients are mixed together in any proportion and are not chemically combined. While the properties of a chemical compound are always the same for the same substance, the properties of a mechanical mixture vary according to the proportion of the several ingredients in the mixture.

(c) Atomic volume is a term denoting the relative volume of a substance referred to an assumed unit. In chemistry, the volume of one gram of water at maximum density (1 c.c.), being the volume per unit weight of water, is the assumed unit volume. Hence, the atomic weight of a substance, divided by its specific gravity referred to water, gives the atomic volume of that substance. According to Avogadro's law of gaseous volumes, the molecules of all gases have the same volume, which is twice the size of an atom of hydrogen. Therefore, since both the atomic weight and density of gases are referred to hydrogen as unity, the atomic volume of gases is one.

Ques.—Find the weight of 1 cu.ft. of dry air, at a temperature of 60 deg. F. and a barometric pressure of 30 in.

Ans.—The weight of a single cubic foot of dry air is calculated as follows:

$$w = \frac{1.3273B}{460 + t} = \frac{1.3273 \times 30}{460 + 60} = 0.076575 \text{ lb.}$$

where B = barometer (in.) and t = temperature (deg. F.).

Ques.—If in your examination of the mine you detected a cap 3⅜ in. high, what percentage of gas would you say was indicated by this cap? What percentage of gas is shown by each of the following caps: ⅝ in. high; ⅜ in. high; ¼ in. high?

Ans.—The percentage of gas indicated by the height of the flame cap will depend on the kind of lamp used and the oil burned in the lamp. The percentage (J) of gas present varies with the cube root of the height (h) of the flame cap, as indicated by the following formulas:

Unbonneted Davy (sperm or cottonseed oil), $J = \sqrt[3]{36h}$

Bonneted Davy (sperm or cottonseed oil), $J = \sqrt[3]{70h}$

It is not safe to rely on determining the percentage of gas by the height of the flame cap in a lamp burning a volatile oil. As the lamp heats in the gas the oil vaporizes more rapidly, and the vapor formed increases the height of the flame cap. Assuming an unbonneted Davy lamp burning ordinary sperm, lard or cottonseed oil, the percentages of gas indicated by the height of flame cap given in this question are as follows:

Cap 3⅜ in., $J = \sqrt[3]{36 \times 3.375} = 4.95\%$

Cap ⅝ in., $J = \sqrt[3]{36 \times 0.625} = 2.82\%$

Cap ⅜ in., $J = \sqrt[3]{36 \times 0.375} = 2.38\%$

Cap ¼ in., $J = \sqrt[3]{36 \times 0.25} = 2.08\%$

Ques.—In what velocity of air current do the representative safety lamps that are used in mines become unsafe?

Ans.—The unbonneted Davy lamp is unsafe in an explosive current having a velocity exceeding 6 ft. per sec., or 360 ft. per min. A bonnet or shield attached to the Davy lamp increases the security of the lamp to a very slight extent, depending on the kind of bonnet or shield used and the handling of the lamp. An unbonneted Clanny lamp becomes unsafe in an explosive current exceeding 8 ft. per sec., or 480 ft. per min. There are numerous types of bonneted Clanny lamps capable of withstanding velocities that vary from 1,500 to 2,000 ft. per min., depending on the construction of the lamp. A Marsaut lamp with two gauzes may withstand a current having a velocity of 2,600 ft. per min., while a three-gauze lamp has been said to withstand a velocity of 3,100 ft. per min. In every case much depends on the angle at which the air current strikes the lamp, the construction of the lamp, its size and the manner in which the air circulates within the lamp, as well as the character of the gases contained in the current, the amount of dust suspended in the air and the condition of the lamp in respect to being clean and free from any imperfections.

Ques.—Describe the conditions requiring that a mine be worked by locked safety lamps and state what provisions should be made to have extinguished lamps relighted.

Ans.—When a mine generates gas in such quantity that ignition is liable to take place from any slight cause or accident, such as a possible derangement of the circulation of air in the workings caused by the setting open of a door for a short time, or a fall of roof obstructing the airway, or the violation of a mine regulation by an employee, greater safety is secured by the use of locked safety lamps of an approved type. These conditions can be determined only by a careful study of the situation and acquaintance with the mine and its equipment. Where gas feeders are of frequent occurrence or the mine is subject to sudden outbursts of gas, safety lamps should be employed throughout the mine.

In mines where locked safety lamps are used, one or more lamp stations should be established at convenient points in the mine or at the shaft bottom, and these should be placed in charge of competent men whose duty it would be to relight all lamps brought to them.

Correction—A typographical error on page 124 of the last issue of "Coal Age," eleventh line from bottom of first column makes the clearance on one side of a haulage road 2 ft. instead of 2½ ft., as required by law.

Coal and Coke News

Washington, D. C.

A complaint against the new demurrage rules applied by the Cincinnati, Hamilton and Dayton and other railroads on lake cargo coal at lake ports has been filed with the Interstate Commerce Commission by the Cabin Creek Consolidated Coal Co., the Carbon Fuel Co., the Wyatt Coal Co., of West Virginia, the Island Creek Coal Sales Co., of Cincinnati, Ohio, and Jewett, Bigelow and Brooks, of Detroit, Mich. The new demurrage rules were made to apply to lake coal, vessel fuel coal or coke held for trans-shipment at lake ports on Lake Erie.

The Commission was requested as follows:

Prescribe by its order what are reasonable and nondiscriminatory rules, regulations and charges to apply upon lake coal, vessel fuel coal, or coke for trans-shipment at the various ports on Lake Erie on the lines of the said defendants.

That the said several complainants may have reparation for any and all amounts of demurrage assessed and paid to any of the said defendants in excess of the amount accruing, and which would have accrued, under and by virtue of the reasonable demurrage rules and regulations prescribed by the Commission; and that all charges assessed by the said defendants shall be canceled in so far as they may be in excess of the charges computed according to the reasonable and nondiscriminatory rules and regulations to be so prescribed by the said Commission.

An order has been entered by the Interstate Commerce Commission reopening the case of the Black Mountain Corporation against the Louisville & Nashville and other railroads. Last May the Commission entered an order in this case, effective Aug. 1 next, directing that the roads establish rates on bituminous coal from the Black Mountain district in Virginia to Norfolk for delivery to vessels destined to points outside the capes of Virginia which should not exceed by more than 20c. per gross ton the rates contemporaneously in effect from Norton, Va. The roads have failed to agree upon the divisions of these rates and a petition has been filed by the Virginia & Southwestern Railway Co. asking the Commission to prescribe such divisions. In granting this petition the Commission gave notice that the case would be reopened "for the purpose of prescribing divisions of said rates."

By an order just entered by the Interstate Commerce Commission, the Commission has decided to reopen for further hearing the so-called I. & S. case No. 756. This involves the increased rates on coal in carloads from Benton and other producing points in southern Illinois to certain stations on the Missouri-Pacific R.R. in Missouri, Tuxedo Park to Glencoe, Mo., inclusive.

The Commission noted, however, that the roads involved have filed new tariffs canceling the proposed increased rates on soft coal in carloads from St. Louis, Kansas City, Peoria and other points to stations on the Missouri-Pacific R.R. Inasmuch as the roads will apply the rates heretofore applicable to this traffic the Commission's order of suspension has been vacated.

HARRISBURG, PENN.

Keen disappointment is being shown by bituminous operators over the report of General W. M. Black, chief of engineers of the United States Army, recommending that nothing be done toward improving the Youghiogheny River, from its mouth to West Newton, by the construction of three locks and dams, and his suggestion that legislation be enacted authorizing the abandonment of the project.

A report on the Youghiogheny River project was called for from Lieutenant-Colonel Shunk, engineer officer of Pittsburgh, and from the board of engineers for rivers and harbors. In transmitting these reports to Congress, General Black says:

The district officer does not believe that the improvement of the lower end of the river would be of value in affording an outlet for coal or other natural resources. He does believe, however, that the improvement would make a useful and ultimately necessary branch of the Monongahela system, and would bring about a certain amount of traffic by opening up sites for mills. He reaches the conclusion that the Youghiogheny River below West Newton is worthy of improvement to the extent of building the lowermost lock and dam of the three authorized by the act of June 25, 1910, deferring the construction of the other two until experience has justified the first. The division engineer makes no definite recommendations as to the advisability of prosecuting this project, but stated that were the matter entirely new he would recommend that the improvement be not made.

For the construction of these locks and dams it was estimated $1,050,000 would be necessary and an appropriation of $100,000 was made. Of this appropriation, about $12,000 was expended on preliminary work, such as surveys, etc., but no actual work was done.

An Important Decision

It is estimated that the coal miners and their families in Pennsylvania will be vitally affected by the decision of the Workmen's Compensation Board on the appeal from the decision of Referee P. W. Houck, in the case of Mrs. Jacob Reitmyer vs. the Lehigh Valley Coal Co.

The case involves the question as to whether or not supplies bought from the employer and necessary for the performance of the contract should be considered in estimating the wages upon which the rate of compensation is based. Referee Houck held that the cost of such supplies should not be deducted from the wages in estimating compensation. So vital is this case considered to the welfare of the miners that the United Mine Workers will represent the complainant at the hearing before the board.

At a meeting on Feb. 25, the Workmen's Compensation Board adopted a series of rules for ascertaining wages as a basis of compensation. In estimating wages according to these rules, "the value of materials, supplies, tools and other things necessary for the performance of the contract furnished or paid for by the employer is not to be deducted from the amount agreed on in the contract unless it is specifically provided in the contract that the employer shall furnish them; that the employee must procure them from the employer and that the value shall be deducted from the wages."

The referee upheld this ruling, and it is thought that the board will affirm this decision, as it did recently, in a case against the Pardee Brothers Coal Co. In any case, it is said that the decision of the board will be taken to the higher courts in order to secure a final decision on this vital point.

The original case arose over the death of Jacob Reitmyer on Jan. 10, 1916, as a result of injuries received in the coal mines of the Lehigh Valley Coal Co. at Sheppton. The decedent, as was customary among the miners, had purchased explosives and other supplies necessary to his work from the company, the cost of which was regularly deducted from his wages. The company maintained that the cost of such explosives and other supplies should be deducted in estimating the decedent's wages and compensation based upon the lower amount as his real wages.

Medical Attendance and Hospital Expenses

The Workmen's Compensation Board held a meeting on July 14 for the consideration of rules regulating medical attendance and hospital expenses in connection with the act. The three members of the Board were all in attendance, as was Francis H. Bohlen, attorney for the Board.

The meeting was held largely for the purpose of hearing a statement from Attorney David B. Reed, representing the United States Steel Corporation, the H. C. Frick Coke Co. and other large bituminous coal and coke companies. The Board is authorized under the law to allow reasonable medical attendance and hospital bills to injured workmen and it is proposed to fix rules showing just what "reasonable" is in this connection. A proposition has been submitted by Dr. John M. Baldy, chairman of the bureau of medical education and licensure, after consultation with about 175 physicians representing mining and industrial concerns, which specifies minutely the work necessary to be done.

The plan is considered by some of the employers to be too exacting, as it would practically require maintaining a hospital and at least a nurse at each works, no matter how small. Mr. Reed pointed out that in obscure places, such as some of the mining towns of Washington and Fayette Counties, it would involve great expense to have all the things suggested always on hand. The Board made no decision in reference to the matter but will meet again soon, when it will probably be decided whether or not to accept the physicians' suggestions.

The Board also heard about a dozen applications for the "commutation" of allowances of weekly compensation which have been granted. This means that the parties desire to settle for a lump sum. In every case the applications were

refused, the Board holding that it is in the interest of the injured workmen and their dependents as well as of the employers that instalment compensation shall be the rule wherever practicable. It is believed that if this is not done, in the course of time a practice of settling claims cheaply will arise.

An employer is liable for compensation when an employee is injured through the condition of the premises of his employer according to an opinion given on July 15, by Chairman Mackey of the Compensation Board in the case of Peter Dixon against the Tunnell Coaling Co. The appeal was taken from the decision of Referee Jacob Snyder, at the instance of the State Workmen's Insurance Fund. The facts were that the claimant had finished work in the mines and slipped and fell while on his way home. The fall occurred on the company's property.

PENNSYLVANIA

Anthracite

Hazelton—The Central Pennsylvania Stripping Co. has been awarded the contract by the G. B. Markle Co. to strip the basins at Oakdale and Jeddo No. 4.

Pottsville—The United States War Department has recognized the efficiency of the coal miners in the first-aid work and has expressed the desire to have these emergency doctors enter the Government service for border duty. Sergeant John Grace, recruiting agent, was notified on July 15, that 500 men are needed in the medical department, and first-aid miners and drug clerks are especially desired. Wages will be paid higher than in other branches of the service.

Shenandoah—The charters of the Lithuanian Local No. 1358 and Local No. 1403, both of Shenandoah, composed of about 3,000 members of the United Mine Workers of America, and the biggest locals in the district, was revoked on July 13 by President James Mathews of the 9th District. The members of the locals insisted on paying each member $1 a day for idleness during a petty strike started some time ago, over the 8-h. day. President Mathews contended that payment of such strike benefits was unconstitutional.

Lansford—The Lehigh Coal and Navigation Co. recently sustained a loss of $50,000 at its No. 4 shaft when a water bucket was drawn over the hoisting drum, which completely wrecked the engine house. The engineer escaped by jumping through a window sash. In addition to the monetary loss the shaft will be idle for a period of a month before repairs can be made.

Scranton—Cadwalader Evans, general superintendent of the coal department of the Delaware & Hudson Coal Co., recently announced a large number of changes in the system of colliery supervision. The old offices of division superintendent are abolished, and the incumbents, with one exception, have been made colliery superintendents. The colliery superintendents will have entire charge of the collieries under their supervision. James W. Boyd is made assistant chief engineer of mines, with headquarters at Scranton.

Olyphant—James C. Birdsall and others have started a suit in equity to recover approximately $100,000 and also to compel the Delaware & Hudson Coal Co. to forfeit its coal lease on Grassy Island. The suit is entered on a lease made in 1890, whereby the coal company was to mine 20,000 tons of coal annually. Since that time the company has mined a number of new veins for which no royalty was paid.

Wilkes-Barre—One man was killed and two others injured, one so badly that his death is imminently expected, as the result of an explosion in the No. 10 slope workings in the Red Ash vein of Prospect Colliery of the Lehigh Valley Coal Co. on July 13.

Pittston—Three men were injured in an explosion of gas in the Hoyt shaft of the Pennsylvania Coal Co. on July 15. Joseph Peveso, miner, and Michael Buskisky, laborer, were taken to Pittston Hospital with extensive burns; John Barnosky was removed to his home. The accident occurred when Peveso broke through a wall into the adjoining chamber.

The breaking of a steam pipe in the No. 7 mine, Ewen colliery, Pennsylvania Coal Co., caused the suffocation of four mules in an underground barn in the Checker vein. The loss amounts to over $1,000.

Shamokin—The Corbin colliery of the Excelsior Coal Co. is idle because its 300 employees struck when the company refused to reëmploy several men who quit recently in order to get a higher wage rate for driving breasts.

Bituminous

Johnstown—The Cambria County coal operators who are interested in the movement to establish mine-rescue stations in this section are now discussing whether or not it would be advisable to erect new buildings for the stations or to purchase buildings in towns where the stations are to be located. This will be one of the matters discussed at the next meeting of the operators.

Dixonville—The strike at the Luzerne mines in Indiana County has been settled and 200 or more men who had been idle for several weeks have returned to work.

Connellsville—Figures recently compiled show that the Connellsville coke region during the first half of the year produced 11,313,222 tons of coke, being an increase of 3,976,678 tons over the corresponding period of last year. The region is now producing at the rate of approximately 22,000,000 tons annually, or 10 per cent. more than was ever produced before. The many byproduct ovens now being built throughout the country may play an important part in the production of the region in the future. Present production is somewhat less than it has been in the past.

A declining demand for coke on the part of the United States Steel Corporation has caused curtailment of output by the H. C. Frick Coke Co. All ovens in blast at the Valley and Dorothy plants have been ordered out, while the operation of the Youghiogheny works has been cut in half. There are now between 500 and 600 ovens of this company banked.

Pittsburgh—Several of the larger companies engaged in the mining of coal in Allegheny and adjoining counties have been adding to their coal area in the last six months. It is said that few eligible or cheaply mined tracts of coal land remain in the hands of brokers. A deal was recently closed for about 320 acres of land between Allenport and Stockdale on the Monongahela River at a total price of about $100,000. The Jamison Coke and Coal Co. is said to have closed an agreement for the purchase of the land, mines and tipple of the Wharton Coal and Coke Co. at Ceral, for about $300,000.

Charleroi—Orders to rush the completion of the new coal tipple at the Black Diamond mine of the Pittsburgh Coal Co. were recently given, and a force of workmen started activities in that direction. It will probably take two months to build this tipple. The presumption is that orders to begin mining operations will immediately follow completion.

WEST VIRGINIA

Charleston—Fifteen fewer fatal accidents occurred in June, 1916, in the West Virginia mines than in the corresponding period one year ago. The total number of deaths due to accident was 391 for the year, while in the same period ending with June 30, 1915, 455 men were killed. Falls of slate caused 224 deaths, gas explosions 70, mine cars 55, motors 24, electricity 12. One hundred and thirty-seven accidents occurred in McDowell County, and 76 in Fayette; Raleigh had 36, Logan 31, Marion 26. The vast majority of the electrical accidents occurred in mines employing a voltage of 500 or more.

Conditions generally in the West Virginia field, except for a shortage of cars and men, are favorable. There is not at this time any idle men in the country, but there is at all times a percentage of men who, though they have good jobs, can be induced to go elsewhere. The demand for cars throughout the northern and eastern portions of the state has far exceeded the supply. On the Chesapeake & Ohio the supply is sufficient for an average of 3 days' operation during a week. The Norfolk & Western and Virginian are just about keeping pace with the output of the mines. On the whole, however, taking the state by and large, conditions are better than they have been for several years.

Glendale—An explosion of gas occurred recently in the mine of the Hitchman Coal and Coke Co. One hundred and fifty men were at work at the time, but all escaped uninjured except 12 who were burned more or less. Six of these were burned seriously and one it was feared, fatally.

Kayford—The Carbon Creek Consolidated Coal Co., Josiah Keeley, general manager, is wiring a number of its employees' houses for electric lighting.

Follansbee—The La Belle Iron Works is erecting a byproduct coke plant, which will be connected with the steel works at Steubenville, Ohio, by a bridge across the river. This plant will contain 94 Koppers ovens in two batteries of 47 ovens each; 85 per cent. of the coal used will be mined at the La Belle plant, the remainder coming from the smokeless fields of West Virginia.

Peytona—The Coal River Collieries Co., W. D. Sharp, St. Albans, manager, has begun shipping from its new mines near here in the No. 2 gas seam. The output is expected to reach 300 tons per day by the first of next year.

KENTUCKY

Whitesburg—La Viers will be the name of the new town to be built between Sergent and Craftsville in the Letcher County field by the Southeast Coal Co., of which H. La Viers, of Paintsville, is manager. Work has begun and will be pushed to completion.

Frankfort—The eastern Kentucky mining fields lead in the increase in population of persons of school age for the year. Letcher County is first, with an increase of 749 in a total

scholastic population of 6,571. Harlan is next with a gain of 665 in a total scholastic population of 6,967.

Pineville—The White Star Coal Co. at Wilhoit, Harlan County, began shipping coal on Monday, July 17. The company is owned by Judge M. J. Moss, J. L. Phillips and Mayor W. L. Moss, of Pineville, and took over the mines of the Moss & Sons Coal Co., leasing a large acreage adjoining and has opened an additional mine.

The Indian Creek Coal Co., recently organized by J. Sherman Cooper, J. C. Walker and C. I. Ross, of Somerset, Ky., to take over the mines of the Four Mile Coal Co. at Rim, began running coal on July 17. The mines had been shut down for several weeks.

Louisville—As the date on which the new workmen's compensation law will become effective, Aug. 1, approaches there is much interest among the coal operators as to the rates which will be in effect. Numbers of the Kentucky operators have been seeking to make an arrangement which would reduce the cost of their insurance. Most of the large operators already provide medical attention for their employees and employees' families and they feel that they ought to have a special rate in view of the fact that the insurance companies would not be called upon to assume this service. This question was put to the Compensation Board at a recent meeting, and at the suggestion of this body has been referred to the companies. No ruling has been given as yet.

OHIO

Newman—The Newman Coal Co. is rapidly dismantling its plant near north Lawrence, and shipping its machinery to Canton, preparatory to abandoning its old mine. It is not known whether or not the company will embark in the same business at some other point.

Athens—A celebration of the resumption of work at mines in the Hocking district has been arranged by agreement between the operators and miners in this vicinity, for July 22. It is to be held at Glouster, in the heart of the district and an ox-roast and addresses by Governor Willis and John Moore, president of the United Mine Workers of Ohio, will be features. All of the mines in the district will be closed for the day.

ILLINOIS

Schramm City—The Schramm City Co-Operative Society, which has been conducting a general store here for the past three years, has made application for incorporation. The society is composed almost entirely of miners, who have been drawing annual dividends of 36 per cent. The concern after its incorporation will be known as the Schramm City Co-Operation Store.

Belleville—A judgment by agreement was recently entered in the Probate Court against the Golden Rule Mine of Lenzburg for $700 for the death of Ferdinand Utz, who was killed in a fall of coal in the mine Feb. 14. An allowance of $192 for hospital and medical expenses was also made.

The Superior coal mine, after being closed for two weeks for repairs, has resumed.

Springfield—Preparations are being made for the resumption of operation in the Springfield district at mines which have been idle in whole or in part for the past two months. Operators say the supply of stock coal is about used up, and the indications are that within the next 30 days practically all of the mines will be running full time in anticipation of the fall and winter demand. Operators in the district say that the mines will all be running by the end of August.

IOWA

Des Moines—Iowa state mine inspectors in their annual report recommend that coal-mining camps in Iowa be abandoned and that miners live in established cities, going to and from the mines on work trains. Temporary mining camps were condemned as being unsightly, unsanitary and poor places in which to rear and educate children. The state mine department further recommended that the use of gasoline motors in mines be prohibited; that all powder kegs be opened with wooden spikes; that copper headed tamping tools be used exclusively; that shot firers be employed by operators, and that first aid be taught in the public schools. Thirty-four men were killed in Iowa mines in 1915. There were 245 accidents which were not fatal.

PERSONALS

J. W. Blower was recently reëlected president of the Hisylvania Coal Co. and the Piney Fork Coal Co. and vice-president of the Thomas Coal Co.

George K. Smith, who has been acting as private secretary for J. S. Jones, president of the Sunday Creek Coal Co., has been made purchasing agent for the company to fill the vacancy caused by the resignation of F. E. Folk.

C. D. Simpson, of the firm of Simpson & Watkins, Scranton, Penn., coal operators and capitalists, is reported to be seriously ill at his home; heart trouble superinduced by an automobile accident six months ago is the cause of Mr. Simpson's illness.

Dal Devore, past mine inspector in the Bellaire district of Ohio, has been made superintendent of the Pultney mine of the George M. Jones Co. Mr. Devore's experience as mine inspector admirably fitted him for the office of mine superintendent.

Duncan McDonald, secretary-treasurer of the United Mine Workers of Illinois, has issued his quarterly report, showing a balance on hand for May, 1916, of $1,338,769.09. The report shows that the organization has 76,579 members in the state, who are identified with 300 locals.

B. B. Woticky has been appointed electrical engineer of the Lehigh Valley R.R. for the purpose of standardizing its electrical equipment and methods at its operations in the shops and at various points along the line. D. J. Cartwright has been appointed assistant electrical engineer.

John Shaw, formerly of the Breese-Trenton Coal Co., of St. Louis, Mo., has gone into business for himself under the name of the Shaw Coal Co. He has offices in the Wainwright Building and handles the output of the Forsyth Coal Co., Marissa, Ill., formerly handled by the Borders Coal Co.

David Davis, of Conesville, Ohio, a well-known coal operator and veteran of the Civil War, recently made application to the Government authorities at Washington for permission to raise a regiment of men, mostly coal miners, for service in Mexico. Mr. Davis asks permission to lead the regiment at the front, although he is well past 70 years of age.

Charles W. Morse, the banker and steamship owner, on his return from Europe on Sunday, July 16, announced that he had arranged not only to ship coal from this country to European ports, but also from London to Archangel and from Cardiff to the Mediterranean. Mr. Morse said he had chartered several steamships on behalf of his company, the United States Steamship Co., of which he is president, but found much difficulty in doing so.

OBITUARY

M. Butler Heilner, vice-president and treasurer of Heilner & Son, No. 1 Broadway, New York, died at his home in Elizabeth, N. J., on Sunday, July 16. The funeral was held on Wednesday afternoon. The firm of Heilner & Son was founded in 1835 by the father of the deceased and is one of the best-known coal firms in the country. Since 1867 Mr. Heilner has resided in Elizabeth. Mr. Heilner is survived by his widow, one son and a daughter and also by his brother, Percy B. Heilner, vice-president of the Lehigh & Wilkes-Barre Coal Co.

INDUSTRIAL NEWS

Hickman, Ky.—The rate on coal from the Tennessee mines located on the Nashville, Chattanooga & St. Louis R.R. has been raised from $1.25 to $1.50 a ton, on approval of the Interstate Commerce Commission, effective Aug. 1.

Lexington, Ky.—The Baltimore & Ohio R.R. is said to be seeking to purchase the old Eastern Kentucky Ry.—running from Riverton, on the Ohio River, to Webbville, Lawrence County. The road is 35 mi. long and was one of the first built in eastern Kentucky. It taps a rich coal territory.

Boston, Mass.—It is announced that the Berwind White Coal Mining Co. has purchased the steamer "Atlantic," built two years ago at Quincy for the Emery Steamship Co. Her new owners will use her to carry coal to France. The "Atlantic" has a single deck, with large hatches and machinery located aft. Her capacity is 9,000 tons dead weight.

Somerset, Penn.—Peter Wojciechowsky, of Belmont, Somerset County, recently entered suit for $4,620 against the Hillsworth Coal Co., representing treble damages which he claims have been inflicted to his property by the operation of the above named corporation. He alleges that the coal was mined without his consent, and as a result the surface subsided.

Clarksburg, W. Va.—F. R. Long & Co., of New York, recently purchased from the Clarksburg Coal Mining Co., of Clarksburg, the latter's plant, known as the Ogara, located at

Reynoldsville. The purchasers propose to operate this plant. Interest in West Virginia coal acreage has revived, and many inquiries have been received for available coal lands in various parts of the state.

Madison, W. Va.—The White Ash Block Coal Co. has recently organized with chief works in the Scott District of Boone County to conduct a general coal-mining business and any other business relative thereto. The authorized capital stock is $25,000, which is held by Meredith Moore of St. Albans, M. A. Gore of Sharples, C. A. Croft, Siegel Workman and Harry Schaffer of Madison.

Newport News, Va.—The lake steamer "Selwyn Eddy," which has been purchased by local interests, left Buffalo in two sections a few days ago. It was necessary to cut the vessel in half and bulkhead the sections in order to pass the locks in Canada. On her arrival in Montreal the vessel will be reassembled and will then enter the coal-carrying trade between this port and Montreal.

Buffalo, N. Y.—The addition to the Wickwire Steel plant, north of the city, which will include three 60-ton open-hearth furnaces, a tinning plant, wire mills and accessories, now well under way, will cost $3,000,000 and the byproduct coke ovens building alongside by the Semet-Solvay Co. and in which the Wickwire company is interested, will cost $2,000,000. Large additions to the coal and electric capacity will be included.

Philadelphia, Penn.—The tug "Wellington" which left here with a tow of two barges of bituminous coal for Charleston, S. C., rescued the crew of 42 men and 60 marines from the U. S. collier "Hector" which went to pieces in heavy gale off Cape Romaine, and landed them at Charleston. During the storm the Wellington lost the barges she had in tow and no tidings have as yet been heard of the crews consisting of five men on each barge.

Mt. Vernon, Ohio—Fred S. McConnell and E. H. Fairchild, two well-known coal operators of Mt. Vernon, Ohio, have filed petitions in voluntary bankruptcy in the Federal courts. The bulk of the assets of both of the men are in stocks and bonds of the Eastern Kentucky Coal Co., of which Mr. McConnell was president and general manager and Mr. Fairchild, secretary-treasurer. The affairs of both men are heavily involved with the coal company.

Charleston, W. Va.—A deal was recently closed, by which the Milwaukee Gas Coal Co. acquired by purchase the properties of the St. Clair Collieries Co., and leases on the property of the Gordon Coal and Coke Co., the M. B. Coal and Coke Co., and the Mecca Collieries Co. About 1,000 acres are involved. The operating company will be known as the St. Clair Coal Mining Co. The mines are at or near Eagle and Edgewater in Fayette County.

Beckley, W. Va.—June shipments of coal over the Chesapeake & Ohio did not come up to the record established by the May tonnage. The total for June was 2,685,370 tons; May was one day longer than June, and one day's more tonnage for the latter month would have brought shipments almost to the point of equaling those for May. During the fiscal year ended June 30, 1916, approximately 29,371,985 tons of coal were carried by the Chesapeake & Ohio.

Boston, Mass.—Coal receipts at Boston during the month of June totaled 448,111 tons of bituminous and 152,017 tons of anthracite, compared with 385,763 tons of bituminous and 147,943 tons of anthracite in June, 1915. Since Jan. 1, 1916, there have been received here 2,803,353 tons of bituminous coal and 929,334 tons of anthracite. In the corresponding six months last year the receipts were 2,692,690 tons of bituminous and 799,839 tons of anthracite coal.

Boston, Mass.—The Consolidation Coastwise Co. has purchased the lake steamer "Inland," which has a capacity of approximately 3,300 tons. This vessel will be used to carry the coal of the Consolidation Coal Co. between Chesapeake Bay ports and New England, replacing the steamer "Charles F. Mayer," which was recently sold to New York parties for the oversea trade. The "Inland" is now at Montreal undergoing minor changes in her construction, but will be in operation soon.

Greensburg, Penn.—A deed for the transfer of almost 155 acres of coal land from E. R. Loucks to the Saxman Coal and Coke Co., of Latrobe, was recently placed on record. The coal land includes for the most part the old Henry Breniser farm along the New Alexandria-Johnstown road. The consideration named in the deed was $100,000. The Peanut mine, near Latrobe, and the other holdings of the Saxman company, will be known in the future by the name of the Saxman Coal and Coke Co.

Cincinnati, Ohio—A number of operators in this city, with interests in the several Ohio fields, are preparing to take an active part in the fight which has been instituted before the Interstate Commerce Commission for a readjustment of coal rates in Ohio with reference to those prevailing from other coal fields, notably those in West Virginia. The Ohio operators take the ground that prevailing rates are much too high, and that the business of coal mining in Ohio has been crippled by the charges made by the carriers.

Louisville, Ky.—Formal notices of the impending dissolution of the Taylor Coal Co. of Kentucky and also the Williams Coal Co. have been published, these companies having been merged into the recently organized Beaver Dam Coal Co., which is operating the Williams mine at McHenry, and the Taylor mine at Beaver Dam, Ky. The same stockholders owned both companies. W. S. Speed is president of the new company, F. M. Sackett vice-president; I. P. Barnard secretary; C. D. Major, treasurer, and B. F. Reed manager of sales. Both mines are idle at present, being involved in the strike of the western Kentucky mine workers.

Cincinnati, Ohio—Construction of an important line to new coal mines in Kentucky will soon be started by the Baltimore & Ohio Railway Co. The Long Fork R.R. will be built from a connection with the Chesapeake & Ohio in Floyd County, southward up the left fork of Beaver Creek to Weeksbury in Knott County, a distance of 26 mi. The new line, which will be a single track and built for heavy traffic, will have five tunnels, ranging from 140 to 775 ft. in length. The town of Weeksbury is being built by the Elkhorn Gas and Coal Mining Co., which is there constructing an extensive mining plant and will be prepared to ship out large quantities of coal as soon as railroad facilities are provided.

Pineville, Ky.—The East Jellico Coal Co., one of the largest mining companies in Bell County, Kentucky, has filed a voluntary petition in bankruptcy in the branch of the Federal Court here. N. R. Patterson, attorney, has been named receiver and has taken charge of the properties. The property was to have been offered for sale on July 10 as the result of a suit to foreclose on $140,000 of bonds, but the sale was canceled, the statement being made then that the company had been able to adjust its financial difficulties. The company has some 2,000 acres of rich coal lands and several operations. It has been working for 8 or 9 yr. Poor business for 3 yr. is given as the cause for the failure.

Pittsburgh, Penn.—An agreement of compromise has been entered into between the owners of unsecured claims and second-mortgage bondholders of the Merchants Coal Co., now in receivers' hands, covering the sale of the properties of said company or reorganization of said company and the distribution of the proceeds of the sale or participation in the reorganization. This company, operating the Orenda mines in the Somerset County, Penn., field, and having headquarters in Pittsburgh, was a subsidiary of the United Coal Co., but about a year ago the receiverships were separated and the Merchants company was not included in the United Coal Corporation, which recently took over the other united properties under a reorganization.

Columbus, Ohio—Rehearing of coal freight rate case of the United Mine Workers of America against the Hocking Valley and the Toledo & Ohio Central railroads in which the state Public Utilities Commission recently ordered rate reductions, has been asked in a formal application by attorneys of the two railroads. The rates in question affect shipments from the Hocking Valley and Sunday Creek mining fields to Toledo and way points. The railroads protest that the commission erred in excluding certain testimony offered it, that they should not have been required to submit to the report made by the inspector appointed by the commission, and that the reduced rates fixed by the commission are "unreasonably low and not fairly compensatory for the service involved."

Crooksville, Ohio—One of the biggest enterprises in the mining industry in southeastern Ohio has been launched by the Zanesville Coal Co. This company has for a number of years operated several mines between New Lexington and Roseville, and some years ago acquired a tract of over 3,000 acres of coal, much of which contains both No. 5 and 6 veins. To develop this a switch three miles long is being laid from the main line of the Pennsylvania road at McLuney to the site of the new opening. It is hoped that the track will be completed and the new mine ready for operation by Sept. 1. The new plant will consist of twin tipples operating from two directions and will be known as Nos. 1 and 6. The new openings will supplant the old No. 1 mine which has been in operation for over 30 years. The Ohio Light and Power Co. will furnish motive power for the new mine. William T. Timmons is president and general manager of the company, and Thomas Opie, of Crooksville, is general superintendent.

Market Department

GENERAL REVIEW

There has been little change in either prices or amount of consumption. Steam grades everywhere are holding up well. Anthracite stocks are not accumulating in consumer's bins as rapidly as might be wished. Both car and labor shortages are anticipated in the fall.

Anthracite—The production of anthracite is at present just about keeping pace with its consumption. There exists a shortage of certain grades throughout New England and the Eastern territory generally. This is particularly true of the larger sizes, such as stove. The lifting of embargoes on certain classes of freight throughout the New England territory for longer periods than heretofore has eased conditions somewhat and permitted shippers to catch up, in a measure, with their orders. Throughout the Middle West and Northwest the demand for anthracite is not so brisk as many dealers and shippers would like to see it and stocks in the consumers bins are small. The receipts of this fuel at several of the lake ports are light and considerable anxiety is felt concerning conditions when the rush season starts in the fall and early winter. A short car supply as is anticipated might seriously complicate this situation.

Bituminous—The exports of coal have fallen off somewhat lately. Ocean tonnage is hard to secure. Stocks are said to be below normal, and there are prospects of still further depletion. The bunker and coastwise movements of coal are normal, while the demand for steam coal all over the country appears to be good. Labor at the mines is somewhat scarce, and probably several thousand more men could be employed. What labor there is appears to be not overly inclined to assiduous work during the hot weather. The recent warm period has also had its effect in lessening the demand for domestic coal the country over. The consumption of this grade of fuel is now probably at its minimum as the weather has been hot and the smallest amount of household fuel is being burned. The prices realized by the producers for bituminous coal are not what they should be, and it is believed that an upward movement will soon set in. Throughout the northern West Virginia fields, a car shortage has been experienced during the past few weeks, and it is believed that this will grow worse throughout the entire Eastern bituminous territory probably reaching its climax during October and November. Taking the country as a whole, the demand for bituminous coal is normal to brisk, with the above noted exception of some of the domestic sizes.

Lake Market—The lake market is on the whole strong. Although buying has been somewhat irregular, the steam coals have been in the lead. Some considerable stocks are accumulating at lake ports for shipment to the Northwest, and transportation is difficult to secure, particularly to Lake Michigan ports, since most of the vessels ply to the ports of Lake Superior. A slight car shortage existing in the Ohio field is making itself felt at the Lakes. The resignation of certain union officials in the Pittsburgh district renders the permanent settlement of labor trouble more probable, and has had a steadying effect upon the market. Throughout the Pittsburgh district generally, all available miners are at work.

Middle West—The general trend of prices in the upper Mississippi Valley is upward. Domestic buying is heavier, and the price of screenings is rising. The recent high temperatures have apparently not affected the demand for steam grades, and the absorption of fuel on contract is steady. The railroads are taking an increased amount of certain grades of coal, while the harvesting demand is now at its height. A shortage of the better grades of Kentucky coal throughout the Northwest is making itself felt. Mines throughout the southern Illinois district are not working to their full capacity, but some operations which have been closed for a considerable length of time are being opened. Many of the mines in southern Illinois in particular are readily disposing of all the slack and steam coal which they produce, but are finding some difficulty in disposing of the domestic sizes contemporaneously produced.

A Year Ago—Record-breaking dullness prevails in anthracite. Indications of a further slowing up in bituminous also. Middle Western markets well maintained.

Business Opinions

Boston News Bureau—The developments of this week certainly corroborate the idea that last week's sudden firmness in money was but a flurry. Call money has settled back to a 3 per cent. basis and there is no urgent demand for time funds at 4 per cent. Good opinion is that a fair 4 per cent. market is likely to prevail into the fall.

Money, of course, is an all-important factor in both the industrial and financial future. It has been a drug for so long that it has been banished from consideration. But when the reserve banks are beginning to discount and call money shoots to 6 per cent., however briefly, bankers naturally enough take counsel. There is little doubt that the reserves of the banks have been depleted, and that a widespread industrial demand in the fall might precipitate a return to normal money rates.

Iron Age—The increasing tonnage of export sales and of foreign inquiry overhanging the steel market is strengthening the position of the steel works in respect to this year's deliveries. Most domestic consumers, having bought what they will require in the next four or five months, are not actively competing for steel with foreign buyers as they were earlier in the year. But with light home buying, each week is increasing the proportion of export steel on the makers' books, and the question of the amount available for home use in the first quarter of 1917 will soon be of live interest.

There is more emphasis this week on the reduced output of steel mills due to the heat, particularly in the Middle West. In the Connellsville region production has suffered enough from the same cause to advance prices for prompt coke. In Alabama, steel works operations have been greatly interfered with by storms, one large plant having its output cut down about 50 per cent.

Marshall Field & Co.—Current wholesale distribution of dry goods has been greater in volume than for the corresponding period a year ago. Merchants have visited the market in much larger numbers. Collections are better than for the same week last year. The market on domestic cotton goods is firm.

Dun—Both in its producing and distributing branches, business is altogether larger and more wholesome than is generally realized. The economic position of the country grows stronger as increased crop yields are foreshadowed, and the tightening of the money situation, while a cause for some hesitancy in certain quarters, is a natural concomitant of the extensive trade development. It was not to have been expected that manufacturing operations would continue indefinitely at the recent high rate of speed, and the moderating activity now apparent at some mills and factories is wholly seasonable. With few exceptions, production does not abate through any lack of contracts, but only because of high temperatures, labor shortage and other restraining influences. Signs multiply that buyers incline toward greater conservatism as money rates rise and prices in some branches go still higher, but forward commitments bulk large in the aggregate and the works in steel, textiles, footwear, and in other leading lines are covered months ahead in most instances and weeks in advance in others. Commercial failures this week in the United States are 303 against 227 last week, 256 the preceding week, and 436 the corresponding week last year.

Bradstreet—Seasonal influences, which usually affect the larger lines during the heated spell, never were so negligible as now. Hot weather has made it uncomfortable for men in industry to work continuously at high speed; but notwithstanding this a relatively noteworthy degree of activity prevails. Speculative buying, predicated heretofore on fears that there would not be enough materials to go around, has, however, largely disappeared, and the situation is all the healthier for this. Most reports agree that prospects point to a continuance of good business through an indefinite period, with little or none of the disturbance incident to a presidential year in evidence. Interior merchants in most parts of the country being optimistic, are likely to be unstinted in their purchases, and as wages in the principal industrial centers are high, while incomes from profit-sharing investments are exceptional, sustained purchasing power is probable.

ATLANTIC SEABOARD

BOSTON

Pocahontas and New River continue in short supply. Georges Creek deliveries slow, particularly at Tidewater. Pennsylvania output still below normal. Slow anthracite shipments give dealers much concern.

Bituminous—There are signs of increasing strength in the market f.o.b. Hampton Roads. Export demand is good, and although coastwise shipments have not gained materially, there is a better tone to the trade. Several shippers are still forced to buy small blocks from their competitors in order to clear steamers which would otherwise be detained. As a result there were a few stray orders for coal both coastwise and off-shore. Little extra impetus is needed to send prices above $2.90, f.o.b.

West Virginia districts, it now seems, may share the labor troubles of other regions during the coming fall and winter, perhaps to greater degree than ever before. Although the Pocahontas field has always been relatively immune, it is realized that it cannot long remain so.

Buyers here are usually complacent until they find their stocks getting light and shipments coming slow. So far the fear of shortage is mostly on the part of shippers, who see no way out of a serious stringency by November or December. There is apparently no way of adding to the amount of transportation, the shortage of which is the real root of the difficulty in New England. Purchasers who favored Georges Creek and certain Pennsylvania grades because more dependence seemed to be placed on getting supplies forward are finding that the situation is general, and not local.

Tows are still making long trips on Georges Creek shipments. The steamer "Inland," about 3,500 tons capacity, is being brought from the Lakes to supplement the fleet owned by the largest Georges Creek shippers. The ship has been chartered to load pulpwood from Chatham, N. B., for Portland, Me., at a very high freight and on discharge of the cargo will ply between Baltimore and New England ports.

Except on certain of the higher grades from Pennsylvania the market is rather spotty. The general tendency is stronger, but some operators are still pushing coal to the loading piers. No speculation is apparent at this end, however; nor would it be worth while. Marine freights are so high that "market coal" would be a risk, and then again it is not a difficult matter to sell f.o.b. once the buyer is assured of a boat firmly in hand. All-rail deliveries are fairly constant. The New Haven R.R. is "on and off" in regard to accepting cars, but under certain restrictions is not so uncertain as might appear. About 35 per cent. of the Philadelphia & Reading Ry. barge space is being applied to bituminous coal for New England ports. The Boston rate is $1.50, and there is a long list of applicants. Some of the Pennsylvania shippers are showing a disposition to catch up with their orders, as if clearing their books for the higher-priced business that is looked for later.

Bituminous quotations at wholesale, f.o.b. loading ports at the points designated, are about as follows, per gross ton:

	Philadelphia	New York	Baltimore	F.o.b. Mine
Clearfields	$2.35@2.85	$2.65@3.15	.....	$1.10@1.60
Cambrias and Somersets	2.60@3.00	2.90@3.30	.....	1.35@1.75
Georges Creek (contract)	3.07@3.17	3.37@3.47	$3.00@3.10	2.00@2.10

Pocahontas and New River, f.o.b. Norfolk and Newport News, Va., are $2.85@2.90. On cars Providence and Boston prices are $4.85@4.95.

Anthracite—Retailers here get little encouragement when filling their orders for domestic sizes. The shipping companies say they are doing the best they can; that unless the men at the mines get out the coal they are powerless to increase shipments. The movement of barges has improved during the past week, but there are still difficulties in connection with loading. Either there is a shortage of dock help or a shortage of the sizes most desired. More than one barge lately has loaded on a schedule quite different from what the consignee ordered. It is, however, a case of "that or nothing." A New York shipper is sending its light barges east of Boston to load ice back—one of the signs that hard coal is expected to be in short supply. Another company was 150,000 tons short of its usual quota in June.

The Boston dealers are piling up orders from consumers, and while deliveries are heavy it is difficult to put out the sizes in the proportions householders wish. The dealers, as a result, are piecing out as best they can. Some of the Eastern trade is hoping to catch up this month or next, a period when ordinarily hands are short, but the volume of coal they obtain will probably be disappointing.

NEW YORK

Anthracite demand continues strong, with some sizes scarce. Chestnut coal in stronger position. Bituminous on verge of boom. Labor situation serious in central Pennsylvania.

Anthracite—Anthracite conditions have undergone slight change during the week, and the demand continues unabated. The lifting of the embargo on all-rail shipments into southern New England has eased Tidewater conditions, and shippers now have a chance to catch up on their line orders.

The mines continue to operate full time, except when labor troubles interfere. In this way the output is sufficient to meet the demand. It is advisable, however, that users fill their bins before the fall rush starts, as there is general conviction that the quantity of winter coal put in is comparatively small.

Locally the situation is encouraging, for the amount of coal on hand is small. Even chestnut which has been long for several weeks, is scarcer than it was a week ago. Egg and stove are bringing full circular, and owing to their scarcity shipments are slow. Although some lots of chestnut have sold at 10 to 15c. off, the situation is becoming better. Pea is easy, with some shippers cutting circular from 20 to 25c.

The buckwheat coals are moving slowly, with fair demand. Buckwheat No. 1 is easy, with quotations ranging from $2.55 up, according to quality. Buckwheat No. 2 is held stiff, and buckwheat No. 3 is quoted around $2 f.o.b. Inquiries regarding boiler coal are said to be on the increase. Prices are held firm.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual		Circular	Individual
Broken	$4.95	.....	Pea	$3.80	$3.60@3.80
Egg	5.25	$5.25	Buck	2.75	2.55@2.75
Stove	5.45	5.45	Rice	2.25	2.00@2.25
Nut	5.55	5.40@5.55	Barley	1.75	1.75@2.00
			Boiler	2.20	

Quotations at the upper ports are generally 5c. higher on account of the difference in water freight rates.

Bituminous—Unless all signs fail, the bituminous trade is on the verge of what may be termed for this time of year a boom. It is evident that the turning point has arrived, but in the opinion of many coalmen the high-water mark is yet to be reached, with $2 coal looked for within the next few weeks. The desire of contract holders to increase their stocks is strengthening the market. Some railroads are reported to have doubled their requirements. Buyers who held off from closing contracts in the expectation of getting low prices are having a hard time arranging for supplies. Most operators have taken on all the contracts they can conveniently handle.

The labor shortage in central Pennsylvania is compelling some mines to operate with only two-thirds of their usual force, which is insufficient to take care of the coal demand.

Line dealers are stocking up and paying more for their coal than is being asked on the Tidewater basis. For instance, quotations for Somerset coals are about $1.50; Quemahoning grades, $1.75; Fairmont gas coals, $1.15, while slack was being held at from $1.25 to $1.40. Quotations for western Maryland coals range from $1.25 to $1.35 at the mines. Tidewater quotations for fair merchantable grades are about $2.85. The best grades are from 20 to 30c. higher.

Current quotations on various grades, gross tons, f.o.b. Tidewater, follow:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein	$3.50@3.65	$3.50@3.65	$3.50@3.65	$1.95@2.10
Georges Creek Tyson	3.10@3.30	3.10@3.30	3.10@3.30	1.55@1.75
Clearfield: Medium	2.95@3.10	2.95@3.10	.....	1.40@1.55
South Forks	3.20@3.30	.....	.....	1.65@1.75
Nanty Glo	3.10@3.20	.....	.....	1.55@1.65
Somerset County: Medium	2.90@3.00	2.90@3.00	2.90@3.00	1.35@1.45
Quemahoning	.....	3.00@3.10	3.00@3.10	1.45@1.55
West Virginia Fairmont ¾	.....	3.00@3.10	3.00@3.10	1.20@1.30
Fairmont mine-run	.....	3.00@3.10	3.00@3.10	1.20@1.30
Western Maryland	.....	2.85@2.95	2.85@2.95	1.30@1.40

PHILADELPHIA

Anthracite in good condition, but quiet. Egg and stove in brisk demand. Chestnut weak, and pea cut in price. Retail dealers hold prices. Bituminous in strong position, with prices unchanged.

Anthracite—Trade conditions, particularly from the shippers' viewpoint, continue quite satisfactory for late July. The only cause for apprehension on the part of shippers is the poor service expected to be rendered during the coming fall and winter. The labor supply at the collieries must be augmented greatly before any tonnage approaching normal for the busy months can be shipped, and at present there is not the slightest reason for this expectation.

With the New England markets calling for prepared sizes some of the large shippers are now finding it impossible to give that territory good service without neglecting their

home trade. This is particularly true of the requisitions for egg and stove sizes, for which the demand has kept up everywhere. From the present outlook little of either of these sizes will go into the storage yards this summer.

Owing to the shortage of cars during the first three months of the year all the chestnut and pea stored last summer which has not been moved is likely to be increased. Chestnut continues to drag seriously, and as three of the big companies still refuse to break on pea they are having trouble to move it at prices from 35c. to 45c. higher than the individuals, and considerable tonnage is necessarily being stored. The smaller shippers who are cutting this size will soon find themselves oversold, and as they are far from able to supply the market it will not be surprising to see it begin to move early in August at $2.70. Prices being equal, the big buyers seem to prefer to do business with the companies whose sales agents are confident of being repaid for holding out.

The price cutters have not offered their bargains so promiscuously this year, but are confining them to big blocks. The information on this account has not become general, but there is no doubt that cheap coal is coming to market. The business was taken early in June, when it seemed impossible after such great activity earlier in the year to hold the market together throughout the summer. It is possible that selling agents who closed at low price protection until September and even October are now regretting it. No shippers are now worried with coal standing on demurrage, and no salesmen are being pressed for orders.

The retail trade has naturally slowed down, but it also remains in good condition for the time of year. Prices have been better, and business has kept up later than usual. The largest retail concern in the city has set the pace by adhering to the prices decided upon early in the spring, and it has found many willing followers. There is more good feeling along these lines than has been shown for years, and it looks as if the "get together" spirit as evidenced last December is bearing good fruit.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide shipment, are as follows:

	Line	Tide		Line	Tide
Broken	$3.60	$4.75	Buckwheat	$1.65	$2.55
Egg	3.95	5.05	Rice	1.00	....
Stove	4.20	5.30	Boiler	.90	1.80
Chestnut	4.30	5.35	Barley	.75	....
Pea	2.60	3.50			

Bituminous—Bituminous coal is in a strong position, although the prices, at least from the producers' standpoint, are not what they should be. But the upward movement cannot much longer be postponed. Mining men continue to show anxiety over the lack of labor at the mines necessary to equalize production and orders, especially since most of the rail and tide embargoes have been removed for longer periods than usual. The prices, which have not varied during the week, are as follows, per gross ton at mines:

Georges Creek Big Vein	$1.90@2.00	Fairmont gas, ¾	$1.55@1.65
South Fork Miller Vein	1.70@1.80	Fairmont gas, mine-run	1.40@1.50
Clearfield (ordinary)	1.35@1.45	Fairmont gas, slack	1.20@1.25
Somerset (ordinary)	1.30@1.40	Fairmont lump, ordinary	1.35@1.45
West Va. Freeport	1.15@1.25	Fairmont mine-run	1.20@1.30
		Fairmont slack	1.20@1.25

BALTIMORE

Anthracite men not inclined to make long-term agreements with retailers. Lower-grade bituminous coals stronger. Rest of market fairly steady.

Anthracite—In previous years consumers with small bin capacity have been privileged by many dealers to store during the low-price period to capacity and then replenish once or twice at the same prices. Inability of many coal men this year to get sufficient storage coal has prevented their being able to promise the same arrangement. Some coal men are reported still to be giving the concession to the new trade, but the majority have to refuse it.

Bituminous—Some of the lower-grade coals, especially of Maryland and West Virginia, that are not infrequently regarded as more or less a drug on the market are now bringing strong prices. This is apparently due to the fact that many mines are now entirely sold up on contract and that labor shortage is holding down the general production below 60 per cent. capacity.

Prices to the trade are about as follows, at the mines, per gross ton: Georges Creek, Tyson, $1.75; Miller vein, $1.45; Quemahoning, $1.50; Somerset, $1.40; Freeport, $1.30; Fairmont, gas, three-quarter, $1.25; same, mine-run, $1.20 to $1.25; slack, $1.20.

Exports—While the export total of 12,420 tons the past week was not imposing, a much better movement is apparently due. Fifteen foreign vessel charters for coal loading here were announced.

HAMPTON ROADS

Slight decrease in exports believed to be only temporary. Stocks still below normal, with prospects of further depletion. Bunker and coastwise movement fair. Local demand for steam coal good. Anthracite dull.

While the exports of the past week show a falling off as compared with the previous week, this condition is believed to be only temporary. The principal causes are the delay in the arrival of bottoms and the shortage of coal of some of the larger shippers.

Stocks have been light for some time. It is estimated by railway officials here that the washouts on the Norfolk & Western and Virginian will delay the tidewater movement from 48 to 72 hours. Stocks are below normal and this delay in movement will no doubt cause a serious shortage this week.

Bunker steamers are arriving in fair number and this class of business is in a satisfactory condition.

Shipments coastwise are in a good condition, the bulk of the tonnage moving to New England ports. The steamer "Harvey H. Brown," which loaded at Sewall Point on July 15 for Boston, is a recent addition to the coastwise coal fleet. Built on the Lakes as an ore carrier, she is particularly adapted to the coal trade. Her cargo capacity is some 4,400 tons.

Local demand for Pocahontas and New River coal is good for this season of the year. Anthracite is dull and little business is being done.

Prices are firm as follows: Pocahontas and New River, for cargo, $2.85@3 per gross ton; Pocahontas and New River, on tracks, $2.75 per net ton; bunker coal, $3.30 plus 10c. trimming, per gross ton; anthracite, $7.50 per net ton.

Ocean Charters and Freights

VESSEL CLEARANCES

The following steamers have cleared from the ports named during the past week:

NORFOLK

Vessel	Destination	Tons
Chimu[6]	Arica, Chile	604
Skogstad[17]	Barbados	5,549
Isle of Jura[16]	Leghorn	5,722
Gemma[16]	Civita Vecchia	4,049
Daiten Maru[16]	Civita Vecchia	4,546
International[2]	Havre	2,285
Willesden[6]	La Plata	7,107
American Transport[2]	Havana	7,697
Ulysses[1]	Cristobal	12,041
Roddam[16]	Civita Vecchia	4,720
Ausable[17]	Montevideo	4,297
Umbria[16]	Italy††	2,448
Messicano[16]	Leghorn	3,908
Rocio[6]	La Plata	5,160
Junin[20]	Bahia Blanca	5,155
Stephen[9]	Para	2,052

NEWPORT NEWS

Vessel	Destination	Tons
Winnecone[17]	Cienfuegos	2,715
Wascana[4]	Rio Janeiro	7,226
Keyvive[4]	Santiago	2,082
Neptune[4]	Port of Spain	647

NEWPORT NEWS—Continued

Vessel	Destination	Tons
Longfellow[4]	Manzanillo	362
Majoren[21]	Lisbon	2,123

BALTIMORE

Vessel	Destination	Tons
Caspare S., Ital.	Genoa, Italy	2,200
Nostra Signora Del Carmine, Ital.	Genoa, Italy	2,102
Franklin, American	Alexandria, Egypt	5,966
Guiseppe D'Ali, Ital.	Civita Vechhia, Ital.	2,152

PHILADELPHIA

Vessel	Destination	Tons
Anna A. McNally	Abaco	
Munorway	Havana	
Nordlys[4]	Tarragona	
Florence Creadick	Cardenas	1,200

[1] Atwater & Co.
[2] Baker Whiteley
[3] Barber & Co.
[4] Berwind-White
[5] C. G. Blake Co.
[6] Castner, Cur. & Bul.
[7] Ches. & O. Coal A. Co.
[8] Ches. & O. C. & C. Co.
[9] Crozer-Pocahontas Co.
[10] Dexter & Carpenter
[11] Flat Top Fuel Co.
[12] Hasler Brothers
[13] Houston Coal Co.
[14] Maryland C. & C. Co.
[15] New River Coal Co.
[16] Pocahontas Fuel Co.
[17] Smokeless Fuel Co.
[18] C. H. Sprague & Son
[19] White Oak Coal Co.
[20] Northern Coal Co.
[21] W. Virginia Coal Co.

†† Gibraltar for orders.

OCEAN CHARTERS

BALTIMORE

Vessel	To	Tons	Rate
Vega	W. Coast Italy	1,937	[1]
Fede	W. Coast Italy	1,179	[1]
Sanstad	Honduras		
Trevarreck	River Plata	2,679	$16.78[2]
Hackensack	Peru		[3]
Giovannia	Italy		[4]
St. Ronald	River Plata		
Claveresk	Felton		
Lillie G.	W. Coast Italy		
Lord Downshire	River Plate	3,112	17.60
Garabaldi, Ital.	Italy	1,277	
Embiricos, Gr.	River Plata	2,334	
Nea Hellas, Gr.	West Coast Italy	2,267	29.20
Majoren, Nor.	Lisbon	1,855	17.00
Tupy, Braz.	Santos	1,786	
Fede, It.	West Coast Italy	1,179	

PHILADELPHIA

Vessel	To	Tons	Rate
Nord'ey Molde-gaard	Valencia		[1]
R. R. Douglas	Havana		[1]
	Charlotte-town, P.E.I.		$4.40

VIRGINIA

Vessel	To	Tons	Rate
Venturia	Rio Janeiro	3,530	15.80[5]
Birkhall	Rio Janeiro	2,731	16.10[6]
O. C. Curtis	Lisbon		15.00
Ausable	River Plata		[1]
E. B. Winslow	Rio Janeiro		

ATLANTIC RANGE

Vessel	To	Tons	Rate
Lord Dunshire	River Plata	3,112	17.00[6]
Devon City	River Plata	2,686	[1]

[1] Prompt. [2] August. [3] Spot.
[4] Owner's account. [5] July-Aug. [6] Aug.

LAKE MARKETS

PITTSBURGH

District officials of mine workers resign, removing chief cause of men's dissatisfaction. Operations practically full. No demand for prompt coal and prices soft.

President Van Bittner and Vice-President Hanaway, of District No. 5, United Mine Workers, resigned late last week and the controversy over the interpretation of the wage scale is in a fair way to be settled. When the trouble first started a common view was that the dissatisfaction of the men was really more with their local officials than with working conditions. Practically all the men in the region are at work and the output is substantially normal. The demand for prompt coal disappeared quite suddenly also quite completely about the beginning of this month, and the market is now practically stagnant, with prices more or less nominal. Slack has become still easier, as there is the usual overproduction, when lake shipments are heavy. We quote prompt coal easy as follows: Slack, 80@90c.; mine-run, $1.30@1.40; ¾-in., $1.40@1.50; 1¼-in., $1.50@1.60, per net ton at mine, Pittsburgh district. The circular price remains at $1.50 for mine run, but this is nominal also.

BUFFALO

Bituminous contracts demand greater production, with co-operation of labor. Prices firm, except mine-run. Light receipts of anthracite from mines cause anxiety.

Bituminous—The trade is doing fairly well, but there is complaint that the miners do not help out when there is need of coal to fill contracts. The contracts are so heavy, however, that it would be hard for some shippers to fill them.

Single orders are light. Sometimes slow sales might be accounted for by the failure to do business twice over. If contracts are heavy, single orders ought to be few. The consumption of coal is large and shows no disposition to fall off. Although a few consumers still have a large supply, shippers are certain that stocks are growing smaller. The moderate car shortage that is promised for early fall will stiffen prices considerably, unless there is greater production than at present.

An increase of Pittsburgh and Allegheny Valley coal is noted, while the Ohio shippers are no longer eager to stay in this market. Their own trade appears to be picking up. Prices are firm for all but mine-run, as follows:

	Pittsburgh	Allegheny Valley	Penn Smokeless
Lump	$2.95	$2.75	$2.80
Three-quarter	2.85	2.60	.....
Mine run	2.75	2.50	2.60
Slack	2.40	2.30	2.60

Prices are per net ton, except east of Rochester and Kingston, Ont., where they are per gross ton.

Anthracite—Shipping agents generally are complaining of light receipts from the mines, but they are eager to make up the spring loss of tonnage and may be over-anxious about present movements, which are only fair. The local trade will not be likely to pick up till fall, unless there is buying at reduced price in August. Some shippers are looking for that. The excessive heat now will do much toward discouraging buying.

Shipments by Lake for the week were only 59,200 tons, divided among the following ports: Chicago, 7,400 tons; Waukegan, 6,500 tons; Milwaukee, 6,000 tons; Sault Ste., Ont., 850 tons; Dollar Bay, 1,850 tons; Duluth and Superior, 28,000 tons; Port Arthur, 3,100 tons. About 30,000 tons of coal regularly shipped over Buffalo docks weekly now goes to Erie, Penn., and will continue to do so till the new dump and dock here are finished for the D., L. & W. company.

Following are July prices of anthracite, per gross ton to dealers, f.o.b. Buffalo:

Grate	$5.85	Chestnut	$6.35
Egg	6.10	Pea	5.00
Stove	6.10	Buckwheat	3.50

For loading on Lake vessels an additional charge of 25c. per gross ton is made. All July loadings are subject to 20c. discount.

CLEVELAND

Car shortage felt in Ohio fields. Small accumulation of Ohio coal at lake ports. Prices remain firm.

Even though the local demand is not brisk, the car shortage has been felt throughout the Ohio coal fields. This condition has prevented prices from dropping. On account of the scarcity of boats for loading up-bound cargoes a small tonnage of Ohio coal has accumulated at Lake Erie loading ports, but it has been of such small volume as not to affect prices, which hold firm.

Sealed proposals will be received by the Cleveland Board of Education until 1 o'clock p.m., Aug. 7, 1916, for furnishing coal for the various school buildings for the season 1916-17. The estimated quantity of coal to be furnished is approximately as follows: 100 tons anthracite; 3,000 tons bituminous lump, 4,500 tons nut, 20,000 tons slack, 2,000 tons smokeless mine run and 10,000 tons smokeless lump.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack		Three-quarter	Mine-run	Slack
No. 8	$2.10	$2.00	$1.90	Youghiogheny	$2.60	$2.50	.....
Cambridge	2.10	2.00	1.85	Pittsburgh	2.60	2.50	.....
Middle Dist.	2.00	1.90	1.80	Pocahontas	....	2.70	...
Hocking	....	....	1.80	Fairmont	2.10	2.00	$1.90

DETROIT

With buying irregular steam coal leads in activity. Domestic stock and anthracite attract little attention. Few boats obtainable for cargoes to Lake Michigan ports.

Bituminous—Orders from most of the consumers of steam coal are for small sizes. Nut, pea and slack constitute the greater share of the business and sales are being made at the equivalent of 90c. at the mines, railroad charges added for local delivery. Mine run, selling in lesser quantity, brings $1.10 to $1.15 and three-quarter lump, for which demand is light, is offered at $1.25 to $1.35, freight added.

Hot weather possibly has a depressing effect on domestic coal. Orders are few and consumers appear uninterested, while retail dealers are not yet willing to provide for fall needs. Consignment coal is not arriving in excessive amount and cut price sales to avoid demurrage are infrequent.

Anthracite—Wholesalers and jobbers are unable to awaken much interest in anthracite. Orders are small and retail yards are not materially increasing stocks, despite the arguments by wholesalers that delay may cause some of the dealers to operate with short supply. Some complaint is made that stove coal is not readily obtainable.

Lake Trade—Shippers find vessel owners are reluctant to take contracts for delivery of coal to docks on Lake Michigan. With almost the entire Lake tonnage employed in handling commodities that are shipped from Lake Superior ports, on which profitable freight rates are paid, few managers are willing to send boats with coal to Lake Michigan, where return cargoes are scarce. Even freighters operating on the Lake Superior route will not wait to load coal for the up-bound trip, if the cargo is not waiting at the loading docks.

COLUMBUS

Increase in domestic demand is noted. Retail prices remain steady at former levels. Lake business is brisk, with large tonnage for Northwest. Steam coals strong.

The feature of the week in Ohio is the better demand for domestic sizes, while the stocking season has not yet reached its zenith, still dealers in both city and country localities are buying much better than formerly. The demand on the part of consumers is picking up and the general tone of the trade shows improvement. Prospects for the future are said to be bright.

Fancy grades, such as Pocahontas and West Virginia splints have also come in for increased demand. Hocking grades are not being stocked at this time to any extent.

Retail prices remain firm at the levels which have prevailed for several weeks. Anthracite is especially strong, prices ranging from $7.50 to $8.25. Both white ash and red ash are also strong. Retail stocks are not large, which is one of the best indications in wholesale circles.

The lake trade is still active, with apparently no let-up in the movement. The tonnage moving from Ohio and West Virginia mines to the Northwest is good, the Toledo docks of the Hocking Valley Railway Co. having loaded 143,000 tons during the past week.

Steam coals show a good demand. Railroads are using a large tonnage for their freight movement, and manufacturing establishments which are large fuel users show a disposition to accumulate a surplus at this time. There is some steam coal being bought on the open market, and prices remain firm. Little demurrage coal is now reported in central Ohio.

Production in most Ohio fields is gradually increasing, the Hocking Valley output is larger than for some time. Eastern Ohio production has been curtailed by car shortage, but in the Massillon and Tuscarawas fields there is a slight increase in output.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	East Ohio		Hocking	Pomeroy	East Ohio
Re-screened lump	$1.60	$1.70	.....	Egg	$1.30	$1.35	....
Inch and a quarter	1.50	1.50	$1.40	Mine-run	1.15	1.20	$1.15
Three-quarter-inch	1.35	1.75	1.30	Nut, pea and slack	.80	.80	.80
Nut	1.25	1.25	.....	Coarse slack	.70	.70	.70

CINCINNATI

Strength a feature of market generally. Demand active, and supply not excessive. Shortage of labor and cars.

With the advance of the season, buying becomes more active on the part of all classes of purchasers at prices which tend to advance steadily in the strong market which is prevailing. Continued inability of operators to secure sufficient men, and a limited supply of cars in virtually all quarters, have permitted such a small volume of coal to be forwarded that the market is practically without spot. Dealers and consumers who have become accustomed in the past two seasons to bargain coal during the summer have been forced into the market. Retailers, likewise, are reported to be suffering from a scarcity of labor, many of them complaining of inability to get enough men to unload cars and for their yards. There has been some congestion at the lakes on account of the heavy movement in that direction, and the resulting inadequacy of the bottoms available. The lake movement looks as if it would break records for the season, as buying at the upper ports has been heavy and the market should continue active until the lakes close. This, of course, has helped the local market, as well as others this side of the lakes, and is partly responsible for maintaining the present situation.

LOUISVILLE

Semistagnation in block coal characterizes Kentucky market. Steam coal strong and active. Short time in many mines.

Virtual stagnation characterizes the domestic coal situation in the Kentucky fields, which is attributed largely to shortage of labor. Louisville and operators in other centers, in order to protect the market, are storing coal in yards. Steam coals are in demand at stiff prices, and mine-run is being quoted freely by operators who cannot get the nut and slack out. Mines generally are running four and five days a week. Prices on domestic grades are holding well, largely, however, because there is no demand.

Prices for eastern Kentucky coals, f.o.b. mines, long ton basis, are: Block, $1.60@1.75, up to $1.90 for the extra fancy grades; block and lump, $1.45@1.50; egg and round, $1.30@1.35; mine-run, $1@1.05; nut and slack, 90@95c. There is no change in the western Kentucky field.

COKE

CONNELLSVILLE

Production not fully recovered. Spot coke strong, although inactive.

Since the interruption to coke production caused by Independence Day, the output of the Connellsville region has not reached full proportions. There is a disinclination on the part of the men to work full time, and while production is increasing the average operator has had difficulty in meeting contract requirements and there has been practically no surplus coke. Consumers have not been in the market to any extent but if conditions continue as in the past fortnight, it is possible some spot coke will have to be bought. Meanwhile the market is regarded as close to $2.75 for spot coke, while the offering of a moderate tonnage would probably depress prices and a moderate increase in demand would send prices still higher.

There is no inquiry for furnace coke on contract, but it is doubtful whether a quotation of $2.35, the price that has been done on several contracts, could now be secured, the operators having firmer views, at least temporarily.

The market for foundry coke is dull and not overly strong. We quote: Prompt furnace, $2.65@2.75; contract, $2.35@2.50; prompt foundry, $3.25@3.50; contract, $3.25@3.50, per net ton at ovens.

Buffalo—All the lower grades of coke are higher, with foundry also tending in that direction. The scarcity of coal has been a contributing cause. Low grades have been too low according to foundry, which is $5.10 strong, furnace, $4.60; high sulphur, $3.85, and stock, $3.60.

Chicago—Wholesalers are urging the trade to store domestic coke early in view of a later car and labor shortage. July circular on domestic sizes is $4.80, but sales have been made as high as $5.30. Foundry sizes show a further rising tendency. Prices per net ton, f.o.b. cars Chicago, are as follows: Connellsville, $6@6.25; Wise County, $6@6.25; byproduct foundry, $6@6.25; byproduct domestic, $4.95@5.30; gas house, $4.60@4.75.

St. Louis—There has been some little inquiry about domestic sizes for country districts. Tonnage that is moving is mostly on contracts. Foundry business is not showing much life at the present time. Prices on coke range from $5.25 on byproduct foundry to $4.50 on domestic sizes for prompt shipment.

MIDDLE WESTERN

GENERAL REVIEW

Prices trend upward, with domestic buying heavier. Screenings rise.

The general situation is considered favorable, with orders more plentiful and domestic trade showing betterment. High temperatures have not retarded the buying of steam coals, for absorption on contract is steady. Shipments of screenings against contract commitments in most instances are up to production. Screenings are selling above $1 in the country districts and at 95c. in the big centers. The price tendency is upward in all sizes with little consignment coal on hand in trade centers to be sacrificed. Western mines are now averaging 65 per cent. of productive capacity. Some consumers are of the opinion that lower prices will prevail this fall and that supplies will be plentiful.

Shipments of steam sizes to the Chicago district have been heavy. Many Chicago retailers are offering premium wages to obtain sufficient labor to handle yard coal. The car supply has been short at some points, and railroad officials have again warned trade that there will not be sufficient equipment to meet the fall and winter requirements if ordering is further delayed.

The smokeless situation shows further improvement, owing to heavy calls on the Pocahontas district to supply the Tidewater demand and increased Lake shipments. This has reduced shipments to Western points from the West Virginia smokeless field and caused steadier prices on spot shipments.

Anthracite is quiescent. The movement of tonnage to Western points is still very backward. Wholesalers anticipate sooner or later a rush of orders.

CHICAGO

Steam coals in demand at higher prices. Firm tone prevails in all grades. Eastern coals dull.

Increased buying of Franklin County coal at the new schedule prices is now reported to be mostly for retail yards. Prices are strong on account of harvest coal demands. Railroads are taking an increased amount of egg coal at the southern Illinois mines.

Saline County steam sizes are especially strong, the average price of screenings being $1 per ton. Some large contracts for Montgomery County steam coal are reported to have been signed recently. Considerable headway is reported by some Illinois shippers in displacing foreign tonnage in the Northwest by southern Illinois coal.

Springfield district operators report a fair demand for domestic sizes, with the July circular price of $1.60 on lump strongly maintained.

Indiana coals are finding a wider market at more stable prices. New orders are being received by the Clinton operators for domestic sizes, and steam shipments show continued firmness. Knox County operators are now running four days a week, and Sullivan County mines which have been closed for the summer are about to reopen.

Smokeless mine run has held firmly at from $1.25 to $1.35. Lump and egg sizes are slightly easier, some spot shipments having sold as low as $1.60. Pennsylvania prepared sizes have been ranging from $1.75 to $2.

Anthracite is slow in the Chicago district, the slight improvement of last week not having been sustained. The wholesalers feel that there will be no impetus to buying until late August.

Quotations in the Chicago market are as follows per net ton f.o.b. cars mine:

	Williamson and Franklin Co.	Springfield	Carterville	Clinton	Knox and Greene Cos.
Lump	$1.55@1.65	$1.55@1.60	$1.55@1.65	$1.50@1.65	$1.50
Steam lump	1.35	1.30@1.35	1.35	1.30@1.35	1.30
2½ and 3-in. lump	....	....	....	....	1.35@1.45
1¼-in. lump	....	....	....	....	....
Egg	1.55@1.65	1.25	1.55@1.65	1.50	1.45@1.50
Nut	....	1.25	....	1.40@1.50	1.35
No. 1 washed	1.55@1.65	....	1.60@1.70	....	....
No. 2 washed	1.50	....	.95@1.00	....	....
No. 1 nut	1.50@1.55	....	....	....	....
No. 2 nut	1.45		....	....	....
Mine-run	1.25	1.15@1.25	....	1.15	1.15
Screenings	.95@1.05	.90@ .95	....	.90@ .95	.95@1.00

	Harrisburg & Saline Co.	E. Kentucky	Pocah. & W.Va.Smok'l.	Penna. Smokeless	Hocking
Lump	$1.55@1.65	$1.65@2.15	$1.65@2.00	$1.60@2.00	$1.65@1.75
1¼-in. lump	1.35	....	....	....	1.60
Egg	1.55@1.65	1.40@1.80	1.65@2.00	1.50@1.70	1.70@1.75
Nut	....	1.25@1.35	1.60	1.25@1.45	....
No. 1 nut	1.50@1.55	....	....	....	....
No. 2 nut	1.45	....	....	....	....
Mine-run	1.25	1.10@1.25	1.25@1.35	1.25@1.35	1.25
Screenings	95@1.00	.95	....	....	....

ST. LOUIS

Hot weather has checked domestic demand. Labor at coal yards is scarce. Steam demand continues good. The business of mines depending on domestic demand is disappointing. Anthracite is dull.

The intensely hot weather has moderated the demand for domestic coal to the minimum. Labor has been scarce at all of the coal yards for the past six or eight weeks; with the advent of the hot wave it has been almost impossible to get any one to work at the coal yards.

A good many of the coal dealers are also in the ice business, and consequently have their hands full without worrying about coal, so all domestic trade is holding off. With the advancing season one would expect a pretty good demand to more than offset the hot wave.

Steam demand continues to be good and all steam sizes are firm in price. Mines in the standard district are operating four days a week. Some little coal is being carried over each night by the mines, mostly domestic coal.

Springfield and central Illinois mines are in practically the same shape as those in the standard district, depending on local requirements and contract business.

In Franklin County the mines started off the month with a good rush, but the last week's business has been something of a disappointment, owing to the fact that this district depends largely on domestic coal for its business.

Williamson County mines are running a heavier tonnage than at any time this year. Anthracite is inclined to be slow.

The market is quotable on the following basis per net ton, f.o.b. mines:

	Franklin County	Williamson	Staunton and Montgomery	Intermediate	Standard
6-in. lump	$1.65	$1.35@1.55	$1.35	$1.25	$1.10
6x3-in. egg	1.65	1.35@1.55	1.35	1.25	1.10
3x2-in. nut	1.65	1.35@1.55	1.35	1.25	1.00
No. 2 nut	1.50	1.20	1.10	1.10	.95
No. 3 nut	1.30	1.20	.....	.....	.....
No. 4 nut	1.25	.....	.....	.....	.....
No. 5 nut	.75	.70	.....	.....	.....
Screenings	.90	.85	.90	.85	.85
2-in. lump	.....	.....	1.25	1.15	.90
Steam egg	.....	.....	1.20	.....	.....
Mine-run	1.25	1.15	1.10	1.05	.85
Washed	.....	.....	.....	.....	.....
No. 1 nut	.....	1.65	1.50	1.50	1.40
No. 2 nut	.....	1.50	1.30	1.30	1.30
No. 3 nut	.....	1.30	1.25	1.20	1.20
No. 4 pea	.....	1.25	1.20	1.20	1.20
No. 5 slack	.....	.75	.75	.70	.70

PRODUCTION AND TRANSPORTATION STATISTICS

COAL EXPORTS FOR MAY

Exports of domestic coal and coke from the United States, and bunker coal laden on vessels engaged in the foreign trade, at the specified districts, during the month of May, 1916, were as follows:

EXPORT COAL

District	Anthracite, Tons	Bituminous, Tons	Coke, Tons
Maine and New Hampshire	.....	70	.....
Vermont	1,017	4,919	41
Massachusetts	100	129	.....
St. Lawrence	150,386	94,538	1,507
Rochester	84,719	155,447	743
Buffalo	175,843	135,551	32,556
New York	17,809	4,419	1,331
Philadelphia	297	76,167	372
Maryland	.....	69,820	13,692
Virginia	.....	497,166	7,254
South Carolina	.....	4,069	.....
Georgia	.....	404	.....
Florida	.....	582	.....
Mobile	.....	2,131	.....
New Orleans	80	1,508	175
Laredo	.....	6,855	1,280
El Paso	65	5,634	.....
Eagle Pass	.....	859	763
Arizona	.....	4,280	16,904
Southern California	.....	50	.....
San Francisco	.....	1	.....
Washington	.....	2,170	4,102
Alaska	.....	2	.....
Dakota	807	2,614	432
Duluth & Superior	.....	1,790	129
Michigan	38	51,174	9,556
Ohio	19,624	861,751	310
Total	450,785	1,984,100	91,147

BUNKER COAL

	Gross Tons
Maryland	56,285
New York	309,420
Philadelphia	35,570
Virginia	187,111

NORFOLK & WESTERN RY.

Below is a statement of the shipments of coal and coke over the Norfolk & Western lines during May, 1916, and five months ended May 31, 1916, as compared with corresponding periods of the previous year, in net tons:

Shipments:	May 1915	May 1916	5 Months 1915	5 Months 1916
Coal				
Tidewater, foreign	385,449	314,057	1,138,766	1,307,905
Tidewater, coastwise	262,281	281,389	1,314,290	1,570,540
Domestic	1,786,884	2,534,141	7,594,820	11,170,189
Coke				
Tidewater, foreign	5,605	7,613	8,564	25,069
Domestic	73,665	175,756	358,202	871,835
Total	2,513,884	3,312,956	10,414,642	14,945,538

TRANSVAAL

The coal production for February, according to the Transvaal Chamber of Mines, amounted to 470,946 tons, which compares with 319,670 tons for February of last year, or an increase of 161,266 tons, and 435,548 tons for January this year, or an increase of 35,398 tons. The gross production for two months of this year has amounted to 906,494 tons, as compared with 687,965 for the same period last year, or an increase of 118,529 tons.

I. C. C. DECISIONS

Investigation and Suspension Docket No. 740—Coal to Missouri Stations. Submitted May 17, 1916. Decided May 24, 1916.

Proposed increased rates on bituminous coal in carloads from mines on the Southern Ry. in Illinois and Indiana to stations on the Chicago & Alton R.R. in Missouri have not been justified, and schedules under suspension ordered canceled.

No. 3771—Stonega Coal and Coke Co. vs. Louisville & Nashville R.R. Co. Investigation and Suspension Docket No. 71—Coal and Coke Rates. Investigation and Suspension Docket No. 321—Coal Rates from Virginia Mines. Investigation and Suspension Docket No. 625—Coke from Virginia Points. Investigation and Suspension Docket No. 633—Coal from Virginia Mines. Submitted Nov. 4, 1915. Decided May 23, 1916.

1. Reasonable divisions to the Interstate R.R. out of the through rates involved fixed at 15c. per ton on coal and 18c. per ton on coke.

2. The provisions of section 16-A of the act regarding the rehearing of cases by the Commission does not contemplate that the rehearing must be completed and a supplemental report and order be made before the expiration of the original order.

3. Exhibits compiled by Commission's examiners of accounts, offered in evidence at a duly appointed hearing, without objection from interested parties, properly identified by the official stenographer and filed in the record along with all the other evidence in the case, are lawfully a part of the record.

4. Rates fixed under Federal authority must yield "just compensation," which comprehends a reasonable return upon the value of property devoted to public use.

5. Where the traffic involved is only a portion of the traffic moving over the originating division, and only a small portion of the coal and coke traffic moving over the line, which, in turn, is only a small part of the entire coal and coke tonnage moving over the entire system, a claim that the rates on the traffic involved are confiscatory is not established until it be shown that the rates on the other traffic moving over the originating line are reasonably remunerative and that the revenue derived from the other coal and coke traffic moving over the line is adequate.

6. Commercial competition a controlling factor in the adjustment of the rates here considered.

7. Reasonable rates on coal from St. Charles and Appalachia are found herein to be such as do not exceed the rates contemporaneously in effect from Middlesboro-Jellico to the same destinations by more than the differential herein fixed. Reasonable coke rates for the future will be such as do not exceed $2.50 per ton to Chicago with proportionately scaled rates to other destinations involved.

8. St. Charles included in Appalachia group and a differential from this group of 15c. per ton over Middlesboro-Jellico rates on coal fixed. Coal Rates from Virginia Mines, 30 I. C. C., 635, modified.

9. The Appalachia group rate to be applied from operations on the Interstate R.R.